

# **Payload Software Interface Control Document Template**

---

## **International Space Station Program**

**AUGUST 7, 2000**

**Revision A**

**TYPE 1 – APPROVED BY NASA**

**National Aeronautics and Space Administration  
International Space Station Program  
Johnson Space Center  
Houston, Texas  
Contract No. NAS15-10000 (PA 08)**



**REVISION AND HISTORY PAGE**

<b>REV.</b>	<b>DESCRIPTION</b>	<b>PUB. DATE</b>
–	Initial Release (Reference per SSCD 001275, EFF. 08/14/98) Approved at the PCB	11/04/98
A	Revision A (Reference per SSCD 003197, EFF. 08/09/00)	10/23/00

**INTERNATIONAL SPACE STATION**  
**PAYLOAD SOFTWARE**  
**INTERFACE CONTROL DOCUMENT TEMPLATE**  
**AUGUST 7, 2000**

## PREFACE

This document is the Payload Software Interface Control Document (ICD) Template for Pressurized and Attached Payloads.

This document is to be used by NASA and Payload Developers to document software data formats, identification labels, data sizes, and other software interface parameters. Unique Payload Software ICDs are to be developed using this document as a template. Unique Payload Software ICDs are to contain all the software interface parameters necessary to ensure that payload data processing equipment can communicate properly with the on-board International Space Station (ISS) vehicle data processing equipment.

Approved By: R.W. Nygren

---

Richard Nygren  
Manager, Space Station Payloads Office  
NASA/OZ

**INTERNATIONAL SPACE STATION**  
**PAYLOAD SOFTWARE**  
**INTERFACE CONTROL DOCUMENT TEMPLATE**

**AUGUST 7, 2000**

**CONCURRENCE**

PREPARED BY:	<u>Carl Konkel</u>	<u>Boeing/TBE</u>
	PRINT NAME	ORGN
	<u>/s/ Carl Konkel</u>	<u>8/8/00</u>
	SIGNATURE	DATE
CHECKED BY:	<u>Michael Soutullo</u>	<u>Boeing/TBE</u>
	PRINT NAME	ORGN
	<u>/s/ Michael Soutullo</u>	<u>8/8/00</u>
	SIGNATURE	DATE
SUPERVISED BY (BOEING):	<u>Doug Craig</u>	<u>Boeing</u>
	PRINT NAME	ORGN
	<u>/s/ Doug Craig</u>	<u>8/8/00</u>
	SIGNATURE	DATE
CONCURRENCE (BOEING)	<u>Jim Duggar</u>	<u>Boeing</u>
	PRINT NAME	ORGN
	<u>/s/ Doug Craig, for</u>	<u>8/8/00</u>
	SIGNATURE	DATE
SUPERVISED BY (NASA):	<u>Gerald Esquivel</u>	<u>NASA/OZ3</u>
	PRINT NAME	ORGN
	<u>/s/ A. Gerald Esquivel</u>	<u>8/8/00</u>
	SIGNATURE	DATE
DQA:	<u>David Henderson</u>	<u>Boeing</u>
	PRINT NAME	ORGN
	<u>/s/ David M. Henderson</u>	<u>8/8/00</u>
	SIGNATURE	DATE

**INTERNATIONAL SPACE STATION  
PAYLOAD SOFTWARE  
INTERFACE CONTROL DOCUMENT TEMPLATE**

**LIST OF CHANGES**

**AUGUST 7, 2000**

All changes to paragraphs, tables, and figures in this document are shown below:

<b>PCBD</b>	<b>ENTRY DATE</b>	<b>CHANGE</b>	<b>PARAGRAPH(S)</b>
			<b>TABLE(S)</b>
			<b>FIGURE(S)</b>
			<b>APPENDIX(ES)</b>
			<b>ADDENDA</b>

## TABLE OF CONTENTS

PARAGRAPH		PAGE
1.0	INTRODUCTION .....	1 – 1
1.1	PURPOSE AND SCOPE .....	1 – 1
1.2	PRECEDENCE .....	1 – 1
1.3	RESPONSIBILITY AND CHANGE AUTHORITY .....	1 – 1
2.0	APPLICABLE AND REFERENCE DOCUMENTS .....	2 – 1
2.1	APPLICABLE DOCUMENTS .....	2 – 1
2.1.1	STANDARDS .....	2 – 1
2.1.2	SPECIFICATIONS AND REQUIREMENTS .....	2 – 1
2.1.3	OTHER DOCUMENTS .....	2 – 1
3.0	PAYLOAD SOFTWARE INTERFACES TO THE ISS COMMAND AND DATA HANDLING SYSTEM .....	3 – 1
3.1	ISS SOFTWARE INTERFACES AND FORMATS .....	3 – 1
3.1.1	DATA BIT/BYTE NUMBERING CONVENTION .....	3 – 3
3.1.2	CONSULTATIVE COMMITTEE FOR SPACE DATA SYSTEMS (CCSDS) HEADER .....	3 – 3
3.1.2.1	CCSDS HEADER FORMATS .....	3 – 3
3.1.2.2	PAYLOAD CCSDS HEADER DEFINITION .....	3 – 5
3.2	LOW RATE DATA LINK .....	3 – 13
3.2.1	LRDL INTERFACE .....	3 – 13
3.2.2	LRDL DATA PACKETS .....	3 – 13
3.2.2.1	LRDL PACKET FORMAT .....	3 – 14
3.2.2.2	HEALTH AND STATUS PACKET FORMAT .....	3 – 14
3.2.2.3	PAYLOAD LRDL CCSDS DATA PACKET DEFINITION .....	3 – 16
3.2.2.4	ISS SUBSYSTEM ANCILLARY DATA SETS .....	3 – 16
3.2.3	LRDL COMMAND PACKETS .....	3 – 16
3.2.3.1	LRDL COMMAND PACKET FORMAT .....	3 – 16
3.2.3.2	PAYLOAD LRDL CCSDS COMMAND PACKET DEFINITION .....	3 – 17
3.3	MEDIUM RATE DATA LINK .....	3 – 18
3.3.1	MRDL INTERFACE .....	3 – 18
3.3.2	MRDL 802.3 ETHERNET FORMAT .....	3 – 18
3.3.3	MRDL DATA PACKETS .....	3 – 19
3.3.3.1	PAYLOAD MRDL CCSDS DATA PACKET DEFINITION .....	3 – 19
3.4	HIGH RATE DATA LINK .....	3 – 19
3.4.1	HRDL INTERFACE .....	3 – 19
3.4.2	HRDL DATA PACKETS .....	3 – 20
3.4.2.1	BITSTREAM FORMAT .....	3 – 20
3.4.2.2	PAYLOAD HRDL CCSDS DATA PACKET FORMAT .....	3 – 20
3.4.2.3	PAYLOAD HRDL CCSDS DATA PACKET DEFINITION .....	3 – 21
4.0	ABBREVIATIONS AND ACRONYMS .....	4 – 1
4.1	DEFINITIONS .....	4 – 2

**TABLE OF CONTENTS (Continued)**

PARAGRAPH

PAGE

**APPENDIX**

A	'TABLE OF CONTENTS .....	A – 1
B	C&DH DATA BASE IMPLEMENTATION REQUIREMENTS .....	B – 1



**TABLES**

TABLE		PAGE
3.1-1	PAYLOAD SOFTWARE INTERFACE APPLICABILITY SUMMARY ....	3 – 2
3.1-2	PAYLOAD NETWORK PARAMETER SUMMARY .....	3 – 3
3.1.2.2-1	SUMMARY OF CCSDS HEADER DEFINITIONS – TRANSMIT DATA HEADERS .....	3 – 6
3.1.2.2-2	SUMMARY OF CCSDS HEADER DEFINITIONS – RECEIVE DATA HEADER AND COMMAND HEADER .....	3 – 7

## FIGURES

FIGURE		PAGE
3.1-1	C&DH INTERFACES BETWEEN THE PAYLOAD AND ISS .....	3 - 1
3.1.2.1-1	CCSDS PACKET FORMAT .....	3 - 5
3.1.2.2-1	PAYLOAD DATA PRIMARY AND SECONDARY HEADER – TELEMETRY DATA TO MDM .....	3 - 8
3.1.2.2-2	PAYLOAD DATA PRIMARY HEADER – HEALTH AND STATUS TO PAYLOAD MDM .....	3 - 8
3.1.2.2-3	PAYLOAD DATA HEADER – MDM TO PAYLOAD (RESPONSE TO REQUEST) .....	3 - 9
3.1.2.2-4	PAYLOAD DATA HEADER – MDM TO PAYLOAD (UNIQUE ANCILLARY DATA) .....	3 - 9
3.1.2.2-5	PAYLOAD DATA HEADER – MDM TO PAYLOAD (BROADCAST ANCILLARY DATA) .....	3 - 10
3.1.2.2-6	PAYLOAD DATA HEADER – MDM TO PAYLOAD (FILE TRANSFER) .....	3 - 10
3.1.2.2-7	PAYLOAD COMMAND HEADER – UPLINK (POIC) .....	3 - 11
3.1.2.2-8	PAYLOAD COMMAND HEADER – PCS .....	3 - 11
3.1.2.2-9	PAYLOAD COMMAND HEADER – TIMELINER .....	3 - 12
3.2.1-1	PAYLOAD LRDL INTERFACE TO THE C&DH SYSTEM .....	3 - 13
3.2.2.1-1	PAYLOAD LRDL DATA PACKET FIRST MESSAGE FORMAT .....	3 - 14
3.2.2.2-1	PAYLOAD HEALTH AND STATUS DATA PACKET FORMAT (THREE SUB-ELEMENTS ACTIVE) .....	3 - 15
3.2.3.1-1	PAYLOAD LRDL COMMAND PACKET MESSAGE FORMAT .....	3 - 17
3.3.1-1	PAYLOAD MRDL DATA LINK INTERFACE TO THE ISS C&DH SYSTEM .....	3 - 18
3.3.2-1	MRDL 802.3 ETHERNET PACKET FORMAT .....	3 - 19
3.4.1-1	PAYLOAD HRDL INTERFACE TO THE ISS C&DH SYSTEM .....	3 - 20
3.4.2.2-1	PAYLOAD HRDL DATA PACKET FORMAT .....	3 - 20

## **1.0 INTRODUCTION**

### **1.1 PURPOSE AND SCOPE**

The purpose of this Payload Software Interface Control Document (ICD) Template is to define the flight unique software interface requirements between Integrated Payload Systems and the International Space Station (ISS) flight data handling elements, and forms the basis for the development of the payload-unique and flight-unique Software ICDs. This ICD also defines the format of the documentation output of the data collected and maintained in an electronic database. The term payload as used in this document refers to an integrated payload system and includes all ISPRs, associated Utility Output Panel (UOP) connected payloads and Attached Payloads connected to the ISS Command and Data Handling (C&DH) System. The data contained in this document is provided by various organizations and is to be maintained in the Payload Data Library as defined in SSP 52000-PDS, Payload Data Sets Blank Book. When a Payload Developer is developing the payload-unique and flight-unique Software ICD, informational text in the unshaded boxes shall be removed and replaced with the requested data. Revision A is a complete update to the original document and includes both onboard and ground software interface requirements.

### **1.2 PRECEDENCE**

In the event of conflict between SSP 41161, United States On-orbit Segment (USOS) Specification or SSP 57000, Pressurized Payloads Interface Requirements Document (IRD), and the contents of this ICD Template, the order of precedence is as follows:

- (1) SSP 41162, United States On-orbit Segment (USOS) Specification
- (2) SSP 57000, Pressurized Payloads Interface Requirements Document (IRD)
- (3) SSP 57002, Payload Software Interface Control Document Template

### **1.3 RESPONSIBILITY AND CHANGE AUTHORITY**

This document is prepared and maintained by the ISS Prime Contractor in accordance with SSP 30459, Interface Control Plan. The Payload Control Board has document baseline authority for this document and subsequent changes.

(This Page Intentionally Left Blank)

## **2.0 APPLICABLE AND REFERENCE DOCUMENTS**

### **2.1 APPLICABLE DOCUMENTS**

The latest revision of the following documents form a part of this document to the extent specified herein.

The Payload Engineering Integration (PEI) organization and the Payload Developer will establish the revision level and record them at the time of the unique ICD development.

#### **2.1.1 STANDARDS**

<b>DOCUMENT NO.</b>	<b>TITLE</b>
MIL-STD-1553	Digital Time Division Command/Response Multiplex Data Bus
ISO/IEC 8802-3	Information Technology – Local and Metropolitan Area Networks, formerly known as ANSI/IEEE 802.3

#### **2.1.2 SPECIFICATIONS AND REQUIREMENTS**

<b>DOCUMENT NO.</b>	<b>TITLE</b>
SSP 41162	United States On-orbit Segment Specification
SSP 57000	Pressurized Payloads Interface Requirements Document
SSP 52050	Software Interface Control Document Part 1, International Standard Payload Rack to International Space Station
SSP 50184	Physical Media, Physical Signaling and Link Level Protocol Specification for Ensuing Interoperability of High Rate Data Link Stations in the ISS
SSP 50478	Payload Data Library Requirements Document
D684-10056-01	Prime Contractor Software Standards and Procedures Specification

#### **2.1.3 OTHER DOCUMENTS**

<b>DOCUMENT NO.</b>	<b>TITLE</b>
CCSDS 701.0-B-2	Advanced Orbiting Systems, Networks and Data Links: Architectural Specification
MSFC-STD-1274	MSFC HOSC Telemetry Format Standards

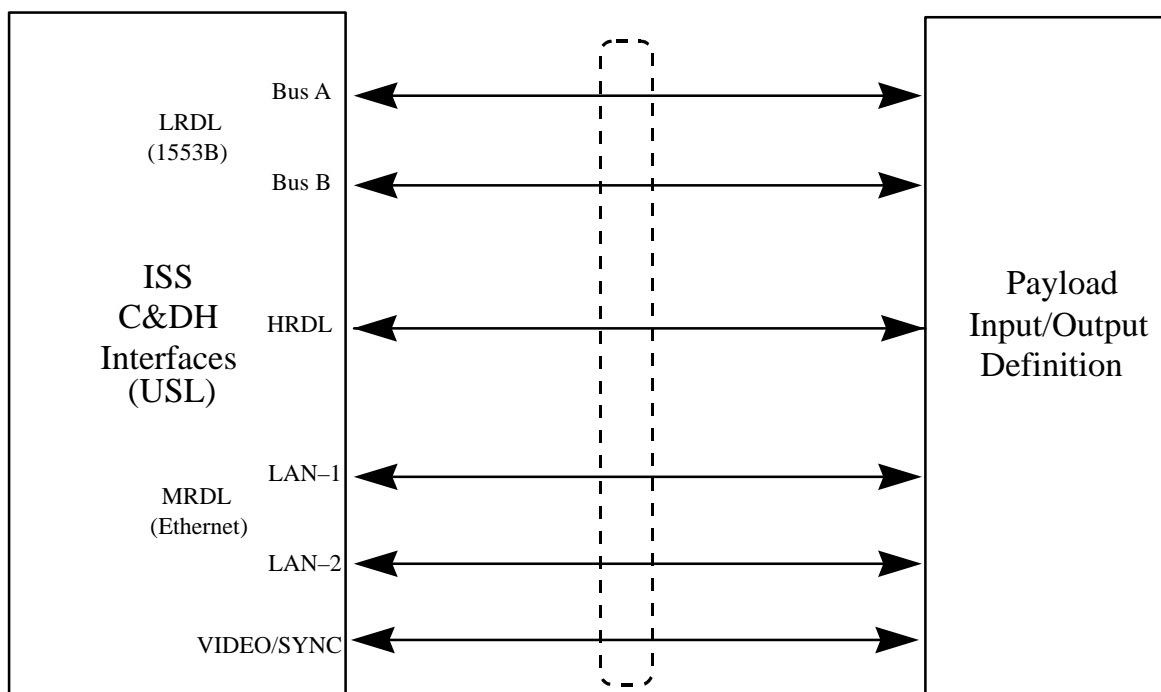
<b>DOCUMENT NO.</b>	<b>TITLE</b>
MSFC-DOC-1949 Vol. 4 & 5	MSFC HOSC Database Definitions Volume 4 Telemetry Database, Volume 5 Command Database
SSP 30459	International Space Station Interface Control Plan
SSP 41158	Software ICD Part 1 United States On-orbit Segment (USOS) to International Ground Systems Segment (IGSS) Ku-band Telemetry Formats
SSP 41175-01	Prime Contractors Software Standards and Procedures Specifications
SSP 41175-02	Software Interface Control Document Part 1, Station Management and Control to International Space Station Book 2, General Software Interface Requirements
SSP 41175-08	Software Interface Control Document Part 1, Station Management and Control International Space Station Book 8, Multiplexer/Demultiplexer Interface
SSP 52000-DSS-PDP	Payload Data Sets Blank Book for Pressurized Payloads

### 3.0 PAYLOAD SOFTWARE INTERFACES TO THE ISS COMMAND AND DATA HANDLING SYSTEM

#### 3.1 ISS SOFTWARE INTERFACES AND FORMATS

The Payload Developer (PD) will determine the number and type of interfaces based on the requirements of the unique payloads. The PD is responsible for defining the specific hardware/software interfaces for the low, medium and high rate data links between the payload and ISS.

The Payload to ISS Command and Data Handling (C&DH) interfaces are depicted in Figure 3.1–1. A summary of the software services required by a payload for each of these interfaces is shown in Table 3.1–1. Applicable network interface parameters are shown in Table 3.1–2.



**FIGURE 3.1–1 C&DH INTERFACES BETWEEN THE PAYLOAD AND ISS**

The PD will generate this figure to depict the C&DH interfaces required for the processing of their telemetry data and commands.

**TABLE 3.1-1 PAYLOAD SOFTWARE INTERFACE APPLICABILITY SUMMARY**

<b>SOFTWARE INTERFACE</b>	<b>PAYLOAD C&amp;DH INTERFACE</b>		
	<b>LRDL</b>	<b>MRDL</b>	<b>HRDL</b>
Low Rate Command PLMDM PCS POIC Uplink			
Low Rate Telemetry (LRT) Ground Processing (POIC) POIC Throughput To Payload Remote Site			
Health and Status Request for Service Caution and Warning Safety Parameters Limit Exception PCS Display Ground Processing (POIC) POIC Throughput To Payload Remote Site			
Medium Rate Telemetry (MRT) Ground Processing (POIC) Rack to Rack Communications POIC Throughput To Payload Remote Site			
High Rate Telemetry (HRT) Ground Processing (POIC) Rack to Rack Communications POIC Throughput To Payload Remote Site			
Broadcast Time			
Broadcast Ancillary Data			
Unique Ancillary Data Payload Unique Ancillary Data Sets Additional Requested Ancillary Data Parameters			
File/Data Load (Payload Read)			
File Dump (Payload Write)			
Timeliner			

The applicability information in this table will be automatically defined by data entries in Appendix A.



**TABLE 3.1–2 PAYLOAD NETWORK PARAMETER SUMMARY**

<b>NETWORK INTERFACE</b>	<b>PARAMETER VALUE</b>
<b>Local Bus Remote Terminal</b>	
<b>LAN–1 Gateway source</b>	
<b>LAN–2 Gateway source</b>	
<b>LAN 1 Gateway destination</b>	
<b>LAN 2 Gateway destination</b>	
<b>LAN–1 Rack–to–rack source</b>	
<b>LAN–2 Rack–to–rack source</b>	
<b>LAN–1 Rack–to–rack destination</b>	
<b>LAN–2 Rack–to–rack destination</b>	
<b>Internet Protocol (range)</b>	

The PD will define the address, buffer size and maximum acceptable latency for each applicable network interface by completing the network parameter portion of the Payload Data as defined in Appendix A.

### **3.1.1 DATA BIT/BYTE NUMBERING CONVENTION**

Bits are numbered from 0 to N–1 with bit 0 being the first bit transmitted or Most Significant Bit (MSB) and N–1 the last bit or Least Significant Bit (LSB). Bytes contain 8 bits or 1 octet with bytes numbered from 1 to N with byte 1 being the first byte transmitted and byte N being the last. This definition is illustrated pictorially in SSP 52050, Software Interface Control Document Part 1, International Standard Payload Rack to International Space Station, Figure 3.1.1.1–1.

### **3.1.2 CONSULTATIVE COMMITTEE FOR SPACE DATA SYSTEMS (CCSDS) HEADER**

#### **3.1.2.1 CCSDS HEADER FORMATS**

The CCSDS and SSP 50184, Physical Media, Physical Signaling and Link Level Protocol Specification for Ensuring Interoperability of High Rate Data Link Stations in the ISS, define the protocol used for packet data transfer containing primary and secondary headers. The definitions of the format of these headers are found in SSP 41175–2, Software Interface Control Document Part 1, Station Management and Control to International Space Station Book 2, General Software Interface Requirements, as tailored in SSP 52050. The CCSDS standard

header format definition is shown in Figure 3.1.2.1–1. CCSDS headers are comprised of a primary and secondary header. The Application Process ID (APID) is part of the CCSDS primary header and is used to define a unique source–destination pair. For telemetry, it represents the logical path between the data source and destination. For commands, a Logical Data Path (LDP) value is part of the secondary header, is assigned to each command end point, and uniquely identifies the logical destination of U.S. On–orbit Segment (USOS) commands.

APIDs are used for commanding and telemetry routing and are assigned by Payload Engineering Integration in the Unique–Payload Software ICD. More than one telemetry APID may be assigned to a single payload if required and once assigned, the telemetry APID will not change regardless of payload relocation. The payload operations integration center will use the telemetry APID for routing payload telemetry data to multiple destinations.

Possible command sources include Payload Operations Integration Center (POIC), Mission Control Center, International Partner Control Centers, Portable Computer System (PCS), and Timeliner. Command destinations are fixed by Remote Terminal (RT) and include ISPR and Attached Payload locations.

Telemetry sources may be assigned at the rack, subrack, or attached payload level and are not fixed to RTs. Possible telemetry destinations include the POIC, International Partner Control Centers, or User Facilities.

All data to be downlinked must use CCSDS headers as defined in Table 3.1.2.2–1. The CCSDS secondary header is required for the Low Rate Data Link (LRDL) data transfers and is normally optional for Medium Rate Data Link (MRDL) and High Rate Data Link (HRDL) data transfers. If telemetry data is to be processed at the Payload Operations and Integration Center (POIC), however, secondary headers are required. User data follows the header data and has a specific data format based on parameters located in the secondary header. If telemetry data is processed only at the user site, the contents of the secondary header is user–unique and is not documented here.

In a similar manner, payload health and status data contains a secondary header as defined in Table 3.1.2.2–2, but since the payload MDM does not process it, it is a “don’t care”.

These CCSDS headers are not required for payload to payload data transfers on MRDL and HRDL. The data fields denoted by “Real Time Assigned” will vary from packet to packet and can only be defined in real–time when the packets are generated.

All data and commands to the payload also use CCSDS headers. Primary and secondary headers for received data as well as POIC, payload MDM, Portable Computer System (PCS) or Timeliner commands are defined in Table 3.1.2.2–2.

Field ID	Wd #	M S B	1	2	3	4	5	6	7	8	9	10	11	12	13	14	L S B
Primary Header	1	Version # (000)			Type	Sec Hdr Flag	APID										
	2	Seq Flags		Packet Sequence Count													
	3	Packet Length (# Bytes – 1 following this field)															
Secondary Header	4	Time (Most Significant Bits (MSBs) of Coarse Time)															
	5	Time (LSBs of Coarse Time, LSB = 1 second)															
	6	Fine Time								Time ID		Check Wrđ	ZOE TLM*	Packet Type			
	7	Packet ID Word #1 (Element and usage dependent)															
	8	Packet ID Word #2 (Element and usage dependent)															
User Data	9	User Data Word #1															
	n–1	User Data Word #m–1															
Checkwd	n	User Data Word #m–Checkword															

\*Telemetry

**FIGURE 3.1.2.1-1 CCSDS PACKET FORMAT****3.1.2.2 PAYLOAD CCSDS HEADER DEFINITION**

The definition of the primary and secondary headers for both the telemetry and command packets are shown in Table 3.1.2.2-1 and Table 3.1.2.2-2.

TABLE 3.1.2.2-1 SUMMARY OF CCSDS HEADER DEFINITIONS – TRANSMIT DATA HEADERS

Description					Transmit Data Headers		
Field	Word #	Bit Offset	Length	Health & Status Data	Low, Medium, or High Rate Telemetry Data *	File Transfer (Write)	
Primary Header	Version Number	1	0	3	000	000	000
	Type		3	1	1	1	1
	Secondary Header Flag		4	1	1	1	1
	Application Process ID		5	11	Assigned by PEI using Rack Assignment and APID look-up table from Mission Build Facility	Assigned by PEI using Rack Assignment and APID look-up table from Mission Build Facility	Assigned by PEI using Rack Assignment and APID look-up table from Mission Build Facility
	Sequence Flags	2	0	2	11	11	11
	Packet Sequence Count		2	14	Real Time Assigned	Real Time Assigned	Real Time Assigned
	Packet Length	3	0	16	Real Time Assigned	Real Time Assigned	Real Time Assigned
Secondary Header	MSB of Coarse Time	4	0	16	↑	Real Time Assigned	↑
	LSB of Coarse Time	5	0	16		Real Time Assigned	
	Fine Time	6	0	8		Real Time Assigned	
	Time ID		8	2		01	
	Check Sum Word		10	1		0	
	ZOE		11	1	don't care	0	don't care
	Packet Type		12	4		0000	
	Version ID	7	0	16		Assigned by PD	
	Data Cycle Counter	8	0	16	↓	Real Time Assigned	↓

\*Secondary Header required if telemetry processed at POIC

TABLE 3.1.2.2–2 SUMMARY OF CCSDS HEADER DEFINITIONS – RECEIVE DATA HEADER AND COMMAND HEADER

	Description				Receive Data Headers				Command Header
	Field	Word #	Bit Offset	Length	Unique Ancillary Data	File Transfer (Read)	Broadcast Ancillary Data	Request Response	
Primary Header	Version Number	1	0	3	000	000	000	000	000
	Type		3	1	1	1	0	1	1
	Secondary Header Flag		4	1	1	1	1	1	1
	Application Process ID		5	11	Assigned by PEI using Rack Assignment and APID look-up table from Mission Build Facility	Assigned by PEI using Rack Assignment and APID look-up table from Mission Build Facility	Assigned by PEI using Rack Assignment and APID look-up table from Mission Build Facility	Assigned by PEI using Rack Assignment and APID look-up table from Mission Build Facility	Assigned by PEI using Rack Assignment and APID look-up table from Mission Build Facility
	Sequence Flags	2	0	2	11	11	11	11	11
	Packet Sequence Count		2	14	Real Time Assigned	Real Time Assigned	Real Time Assigned	Real Time Assigned	Real Time Assigned
	Packet Length	3	0	16	Real Time Assigned	Real Time Assigned	Real Time Assigned	Real Time Assigned	Real Time Assigned
Secondary Header	MSB of Coarse Time	4	0	16	Real Time Assigned	Real Time Assigned	Real Time Assigned	Real Time Assigned	Real Time Assigned
	LSB of Coarse Time	5	0	16	Real Time Assigned	Real Time Assigned	Real Time Assigned	Real Time Assigned	Real Time Assigned
	Fine Time	6	0	8	Real Time Assigned	Real Time Assigned	Real Time Assigned	Real Time Assigned	Real Time Assigned
	Time ID		8	2	01	01	01	01	01
	Check Sum Word		10	1	0	0	0	0	1
	ZOE		11	1	0	0	0	0	0
	Packet Type		12	4	0111	X	0111	0100	1010
	Spare	7 (cmd)	0	1	0	▲	0	0	0
	Element ID		1	4	0001		0001	0001	0001
	Cmd/Data Packet		5	1	1		1	1	0
	Spare		6	2	N/A		N/A	N/A	0
	LDP Endpoint		8	8	N/A		N/A	N/A	Assigned from D684–10056–01
	Spare	7 (data)	0	1	0		0	0	0
	Element ID		1	4	0001		0001	0001	0001
	Cmd/Data Packet		5	1	1		1	1	0
	Version ID		6	4	0001	don't care	0001	0001	N/A
	Format ID		10	6	000000		001011	000000	N/A
	Subset ID	8 or	0	16	Assigned by PEI		N/A	Assigned by PEI	Assigned by PEI
	Spare	8	0	9	N/A		000000000	N/A	N/A
	Frame ID		9	7	N/A	▼	Real Time Assigned	N/A	N/A

X = don't care

Examples of primary and secondary headers for both data and command packets are shown in Figure 3.1.2.2–1 through 3.1.2.2–9.

Field ID		Bit# Wd#	M S B	1	2	3	4	5	6	7	8	9	10	11	12	13	14	L S B	
P r i m a r y	H e a d e r	1	0 0 0 1 1					APID											
		2	1 1		Packet Sequence Count														
		3	Packet Length																
S e c o n d a r y	H e a d e r	4	Time (MSB)																
		5	Time (LSB)																
		6	Fine Time									0 1 0 0				Packet Type X X X X			
		7	Version ID																
		8	Data Cycle Counter																

APID: (current APID value)

X: Don't Care

**FIGURE 3.1.2.2–1 PAYLOAD DATA PRIMARY AND SECONDARY HEADER –  
TELEMETRY DATA TO MDM**

Field ID	Bit# Wd#	M S B	1	2	3	4	5	6	7	8	9	10	11	12	13	14	L S B
P r i m a r y  H e a d e r	1	APID															
	2	Packet Sequence Count															
	3	Packet Length															

APID: Don't Care

**FIGURE 3.1.2.2–2 PAYLOAD DATA PRIMARY HEADER –  
HEALTH AND STATUS TO PAYLOAD MDM**

Field ID		Bit# Wd#	M S B	1	2	3	4	5	6	7	8	9	10	11	12	13	14	L S B	
P r i m a r y	H e a d e r	1	0 0 0 1 1					APID											
		2	1 1		Packet Sequence Count														
		3	Packet Length																
S e c o n d a r y	H e a d e r	4	Time (MSB)																
		5	Time (LSB)																
		6	Fine Time								0 1 0 0				Packet Type				
		7	0 0 0 0 1 1					0 0 0 1			Format ID								
		8	Subset ID																

APID: (current APID value)

FIGURE 3.1.2.2-3 PAYLOAD DATA HEADER – MDM TO PAYLOAD  
(RESPONSE TO REQUEST)

Field ID	Bit# Wd#	M S B	1	2	3	4	5	6	7	8	9	10	11	12	13	14	L S B	
P r i m a r y  H e a d e r	1	0 0 0 1 1						APID										
	2	1 1		Packet Sequence Count														
	3	Packet Length																
S e c o n d a r y  H e a d e r	4	Time (MSB)																
	5	Time (LSB)																
	6	Fine Time										0 1 0 0				Packet Type		
	7	0 0 0 0 1 1						0 0 0 1				Format ID						
	8	Subset ID																

APID (current APID value)

FIGURE 3.1.2.2-4 PAYLOAD DATA HEADER – MDM TO PAYLOAD  
(UNIQUE ANCILLARY DATA)

Field ID	Bit# Wd#	M S B	1	2	3	4	5	6	7	8	9	10	11	12	13	14	L S B	
P r i m a r y  H e a d e r	1	0 0 0 0 1						APID 1 1 1 1 1 1 0 1 0 0 0 0										
	2	1 1		Packet Sequence Count														
	3	Packet Length																
S e c o n d a r y  H e a d e r	4	Time (MSB)																
	5	Time (LSB)																
	6	Fine Time								0 1 0 0				Packet Type 0 1 1 1				
	7	0 0 0 0 1 1						0 0 0 1				Format ID 0 0 1 0 1 1						
	8	0 0 0 0 0 0 0 0								Frame ID								

APID: 2000

**FIGURE 3.1.2.2-5 PAYLOAD DATA HEADER – MDM TO PAYLOAD  
(BROADCAST ANCILLARY DATA)**

Field ID	Bit# Wd#	M S B	1	2	3	4	5	6	7	8	9	10	11	12	13	14	L S B	
P r i m a r y  H e a d e r	1	0 0 0 1 1						APID										
	2	1 1		Packet Sequence Count														
	3	Packet Length																
S e c o n d a r y  H e a d e r	4	Time (MSB)																
	5	Time (LSB)																
	6	Fine Time									0 1 0 0			Packet Type X X X X				
	7	X	X X X X X					X X X X X					Format ID X X X X X X					
	8	X X X X X X X X X X X X X X X X																

APID: (current APID value)

X: Don't Care

**FIGURE 3.1.2.2-6 PAYLOAD DATA HEADER – MDM TO PAYLOAD  
(FILE TRANSFER)**



Field ID	Bit# Wd#	M S B	1	2	3	4	5	6	7	8	9	10	11	12	13	14	L S B
P r i m a r y  H e a d e r	1	APID															
	2	Packet Sequence Count															
	3	Packet Length															
S e c H e a d e r  o n d a r y	4	Time (MSB)															
	5	Time (LSB)															
	6	Fine Time															
	7	LDP															
	8	Subset ID															

APID: (current APID value)

LDP: (current LDP value)

FIGURE 3.1.2.2-7 PAYLOAD COMMAND HEADER – UPLINK (POIC)

Field ID	Bit# Wd#	M S B	1	2	3	4	5	6	7	8	9	10	11	12	13	14	L S B
P r i m a r y  H e a d e r	1	APID															
	2	Packet Sequence Count															
	3	Packet Length															
S e c H e a d e r  o n d a r y	4	Time (MSB)															
	5	Time (LSB)															
	6	Fine Time															
	7	LDP															
	8	Subset ID															

APID: (current APID value)

LDP: (current LDP value)

FIGURE 3.1.2.2-8 PAYLOAD COMMAND HEADER – PCS

Field ID	Bit# Wd#	M S B	1	2	3	4	5	6	7	8	9	10	11	12	13	14	L S B	
P r i m a r y  H e a d e r	1	0 0 0 1 1						APID										
	2	1 1		Packet Sequence Count														
	3	Packet Length																
S e c o n d a r y  H e a d e r	4	Time (MSB)																
	5	Time (LSB)																
	6	Fine Time										0 1 1 0				Packet Type		
	7	0 0 0 0 1						0 0 0			LDP							
	8	Subset ID																

APID: (current APID value)

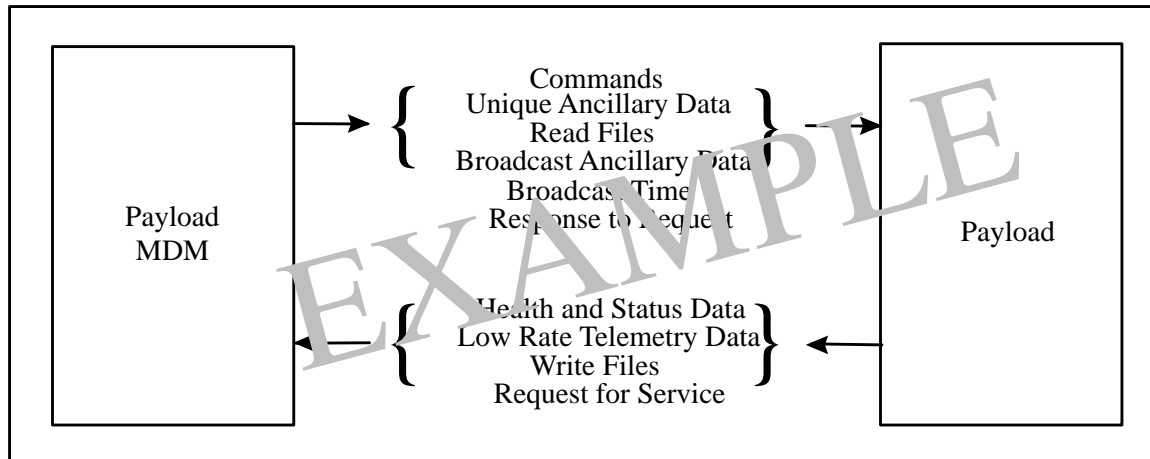
LDP: (current LDP value)

FIGURE 3.1.2.2-9 PAYLOAD COMMAND HEADER – TIMELINER

## 3.2 LOW RATE DATA LINK

### 3.2.1 LRDL INTERFACE

The LRDL is comprised of two types of packets: commands and data. The payload C&DH interface to the ISS LRDL data handling system is depicted in Figure 3.2.1–1. All interfaces with the Payload MDM will be accomplished via MIL–STD–1553, Digital Time Division Command/Response Multiplex Data Bus, with the payload acting as a Remote Terminal (RT).



**FIGURE 3.2.1–1 PAYLOAD LRDL INTERFACE TO THE C&DH SYSTEM**

The PD will generate this figure to depict software interfaces required for the processing of their telemetry and commands.

### 3.2.2 LRDL DATA PACKETS

LRDL data packets are either a receive data packet (payload MDM to payload) or a transmit data packet (payload to payload MDM). LRDL transmit data packets are used for Low Rate Telemetry (LRT), health and status, file write, and request for service functions. LRDL receive data packets are used for file read, ancillary data, time and response to request functions.

### 3.2.2.1 LRDL PACKET FORMAT

The LRDL data packet must be greater than 50 words and cannot exceed 640 words. LRDL data packets are transmitted in 32 word messages. The format of the first message of the Payload LRDL data packet is shown in Figure 3.2.2.1–1.

Field ID	Bit# Wd#	M S B	1	2	3	4	5	6	7	8	9	10	11	12	13	14	L S B
H e a d e r s	1 through 8	Header Words															
User Data	9	User Data Word # 1															
	10	User Data Word # 2															
	⋮	⋮															
	n	User Data Word # n–8															
	⋮	⋮															
	≤ 32	User Data Word # ≤ 24															

**FIGURE 3.2.2.1–1 PAYLOAD LRDL DATA PACKET FIRST MESSAGE FORMAT**

### 3.2.2.2 HEALTH AND STATUS PACKET FORMAT

The format of the payload health and status data packet with all sub–elements active is shown in Figure 3.2.2.2–1. Health and status data is collected for active sub–elements only; therefore the length of the packet will vary as sub–elements are activated/deactivated. The size of the health and status packet cannot exceed 1280 words.

Field ID	Bit# Wd#	M S B	1	2	3	4	5	6	7	8	9	10	11	12	13	14	L S B
H e a d e r s	1 through 8	Header Words															
User Data	9	Subset ID (X)															
	10	Service Request ID															
	11	Service Request Data															
	12	Caution and Warning															
	13	Data Word 1 of Subset X															
	⋮	⋮															
	n	Data Word n <sub>1</sub> of Subset X															
	n+1	Subset ID (Y)															
	n+2	Service Request ID															
	n+3	Service Request Data															
	n+4	Caution and Warning															
	n+5	Data Word 1 of Subset Y															
	⋮	⋮															
	m	Data Word n <sub>2</sub> of Subset Y															
	m+1	Subset ID (Z)															
	m+2	Service Request ID															
	m+3	Service Request Data															
	m+4	Caution and Warning															
	m+5	Data Word 1 of Subset Z															
	⋮	⋮															
	p	Data Word n <sub>3</sub> of Subset Z															

**FIGURE 3.2.2.2–1 PAYLOAD HEALTH AND STATUS DATA PACKET FORMAT  
(THREE SUB-ELEMENTS ACTIVE)**

### **3.2.2.3 PAYLOAD LRDL CCSDS DATA PACKET DEFINITION**

The Payload packet definition, conversion coefficients, and the ground processing requirements are defined in Appendix A.

### **3.2.2.4 ISS SUBSYSTEM ANCILLARY DATA SETS**

Payloads can select from a list of existing ancillary data sets or request additional parameters be added to a data set. Unique Ancillary Data that is required by the payload is identified in Appendix A.

The PD will complete all appropriate tables in Appendix A to define the ancillary data required by the payload.

### **3.2.3 LRDL COMMAND PACKETS**

LRDL command packets are executable commands issued to the payload. All LRDL command packets consist of two 32-word messages. This includes CCSDS header words, spare word, legal station mode word, and checksum word as overhead and up to 53 command words.

#### **3.2.3.1 LRDL COMMAND PACKET FORMAT**

The format of a maximum length (64 words including overhead) payload LRDL command packet is shown in Figure 3.2.3.1–1. All CCSDS command packets contain a checksum as the last valid command word in the packet. The checksum is calculated by adding the set of 16 bit words and ignoring any overflow. All payload commands are padded up to 64 words by the payload MDM prior to transmission.

<b>MESSAGE #1</b>		
Word #	Description	Function
1	Header Word 1	CCSDS Primary Header
.	.	.
3	Header Word 3	CCSDS Primary Header
4	Header Word 4	CCSDS Secondary Header
.	.	.
8	Header Word 8	CCSDS Secondary Header
9	Spare	Spare
10	Mode	Legal Station Mode
11	Data Word 1	Command Data
.	.	.
23	Data Word 13	For minimum length command last PD defined word
24	Data Word 24/Checksum	Checksum for minimum length command
.	.	.
32	Data Word 22	Command Data
<b>MESSAGE #2</b>		
Word #	Description	Function
1	Data Word 23	Command Data
.	.	.
32	Data Word 54	Checksum for maximum length command

**FIGURE 3.2.3.1-1 PAYLOAD LRDL COMMAND PACKET MESSAGE FORMAT****3.2.3.2 PAYLOAD LRDL CCSDS COMMAND PACKET DEFINITION**

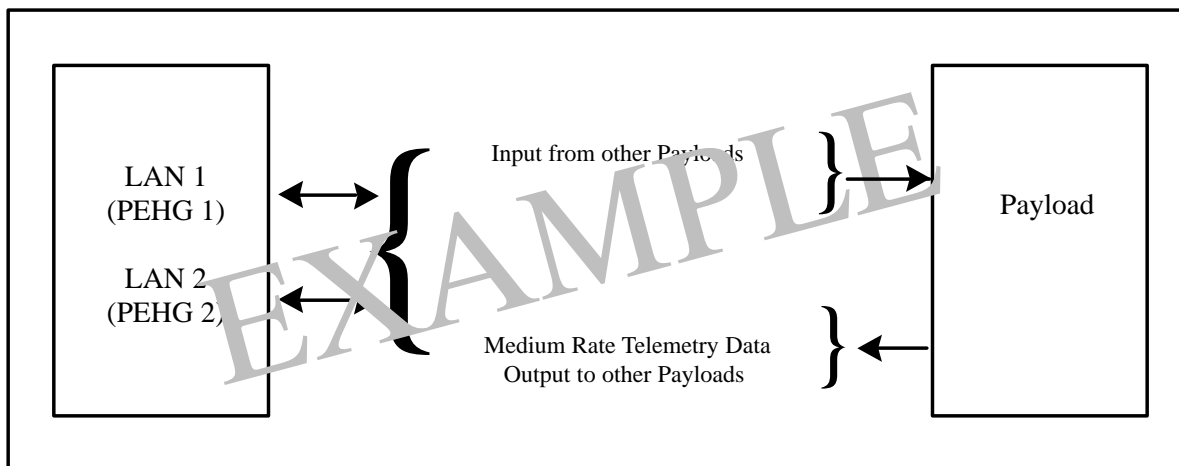
The payload LRDL command parameters, content and packets are defined in Appendix A.

The PD will complete all appropriate tables in Appendix A to define the necessary data required for the software processing of payload commands.

### 3.3 MEDIUM RATE DATA LINK

#### 3.3.1 MRDL INTERFACE

The payload software interface to the ISS MRDL data handling system is depicted in Figure 3.3.1–1. The Payload Ethernet Hub/Gateway (PEHG) is the hub for distribution of packets per ISO/IEC 8802–3, Information Technology – Local and Metropolitan Area Networks, formerly known as ANSI/IEEE 802.3.



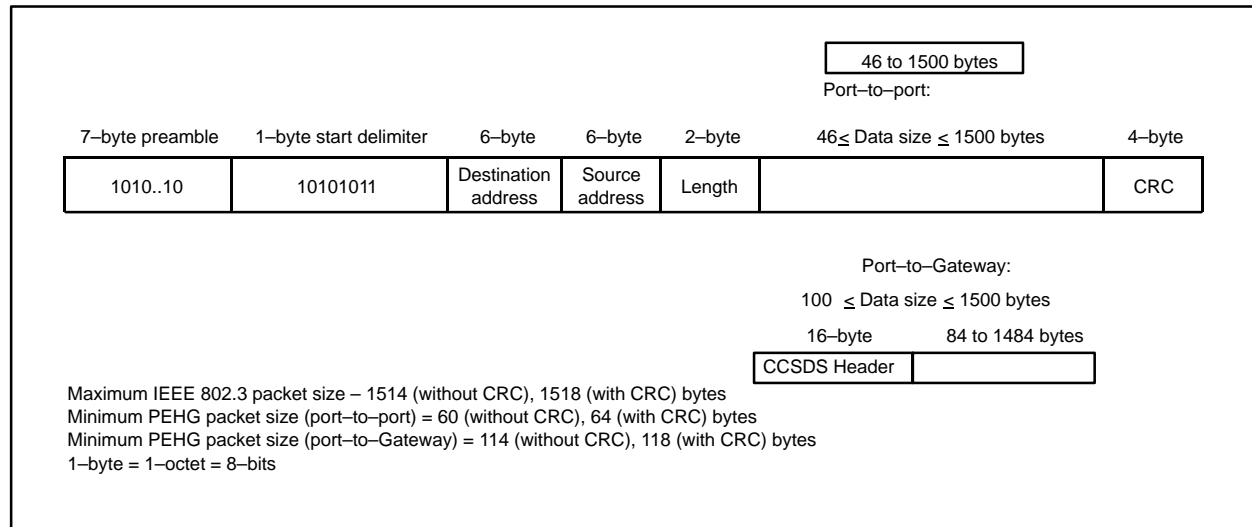
**FIGURE 3.3.1–1 PAYLOAD MRDL DATA LINK INTERFACE TO THE ISS C&DH SYSTEM**

The PD will generate this figure to depict the software interfaces required for the processing of their telemetry data.

#### 3.3.2 MRDL 802.3 ETHERNET FORMAT

The MRDL 802.3 Ethernet format definition is shown in Figure 3.3.2–1.





**FIGURE 3.3.2–1 MRDL 802.3 ETHERNET PACKET FORMAT**

### 3.3.3 MRDL DATA PACKETS

#### 3.3.3.1 PAYLOAD MRDL CCSDS DATA PACKET DEFINITION

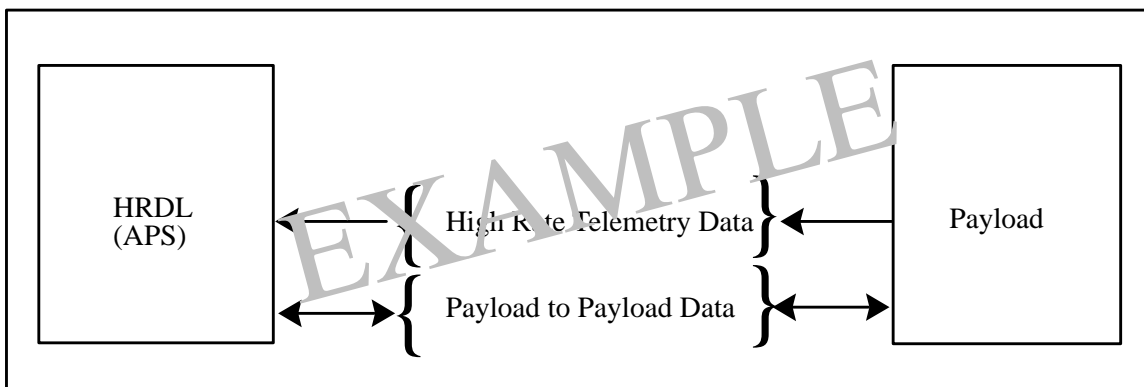
The payload MRDL telemetry data packet sizes, bit rates, and separation between packets are defined in Appendix A.

The PD will complete all appropriate tables in Appendix A to define the necessary data required for the software processing of payload telemetry data.

### 3.4 HIGH RATE DATA LINK

#### 3.4.1 HRDL INTERFACE

The payload software interface to the ISS HRDL data handling system is depicted in Figure 3.4.1–1. Payload high rate data is routed to the Automated Payload Switch (APS).



**FIGURE 3.4.1–1 PAYLOAD HRDL INTERFACE TO THE ISS C&DH SYSTEM**

The PD will generate this figure to depict the software interfaces required for the processing of their telemetry data.

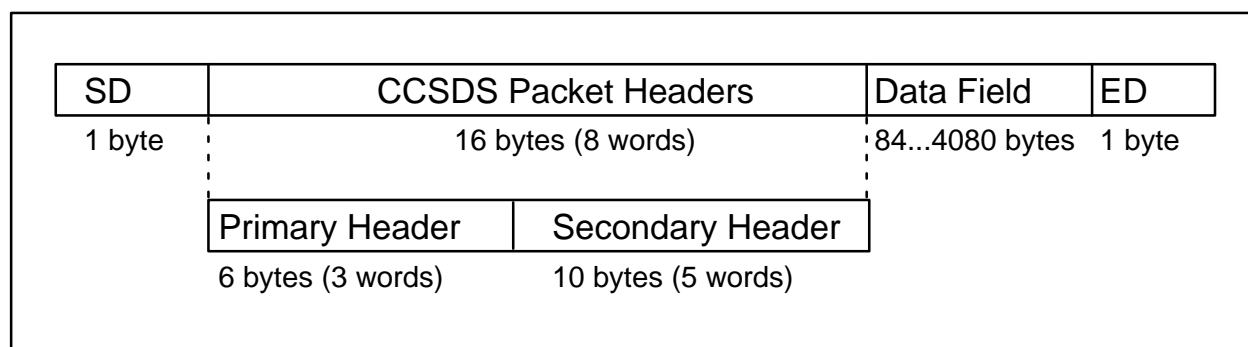
### 3.4.2 HRDL DATA PACKETS

#### 3.4.2.1 BITSTREAM FORMAT

The payload shall transmit data on the HRDL network as an unformatted series of bits containing no start or end delimiters or CCSDS packetization.

#### 3.4.2.2 PAYLOAD HRDL CCSDS DATA PACKET FORMAT

The format definition of the HRDL CCSDS data packet is shown in Figure 3.4.2.2–1. The format includes a start delimiter (SD), end delimiter (ED), CCSDS header and data field.



**FIGURE 3.4.2.2–1 PAYLOAD HRDL DATA PACKET FORMAT**

### **3.4.2.3 PAYLOAD HRDL CCSDS DATA PACKET DEFINITION**

The payload HRDL interface is defined in Appendix A.

The PD will complete all appropriate tables in Appendix A to define the necessary data required for the software processing of payload telemetry data.

(This Page Intentionally Left Blank)

#### 4.0 ABBREVIATIONS AND ACRONYMS

APID	Application Process Identifier
CCSDS	Consultative Committee for Space Data Systems
C&C	Command and Control
C&DH	Command and Data Handling
ED	End Delimiter
FD	Facility Developer
HRDL	High Rate Data Link
ICD	Interface Control Document
IEEE	Institute of Electrical and Electronics Engineers
ISO/IEC	International Organization for Standardization/International Electrotechnical Commission
ISPR	International Standard Payload Rack
ISS	International Space Station
LAN	Local Area Network
LDP	Logical Data Path
LRDL	Low Rate Data Link
LRT	Low Rate Telemetry
LSB	Least Significant Bit
MDM	Multiplexer/Demultiplexer
MRDL	Medium Rate Data Link
MSB	Most Significant Bit
PCS	Portable Computer System
PD	Payload Developer
PEHB	Payload Ethernet Hub/Bridge
PEHG	Payload Ethernet Hub/Gateway
PEI	Payload Engineering Integration
POIC	Payload Operations Integration Center
PSIV	Payload Software Integration and Verification
PUI	Program Unique Identifier
RT	Remote Terminal
SD	Start Delimiter
UOP	Utility Outlet Panel
USL	United States Lab

USOS

United States On-orbit Segment

**4.1 DEFINITIONS**

Ancillary Data	Ancillary Data is a collection of data which is disseminated between various ISS/Payload components.
Application Process ID	The APID is an 11 bit field within the primary header of the CCSDS Packet, which identifies a particular source and destination for commands and data.
Bitstream Data	An undelimited apparently equal weighted string of bits, which appears unstructured to a service provider.
<b>TERM</b>	<b>DEFINITION</b>
Byte	A byte is a set of bits representing a value and can vary in number of bits per set such as 4 bits per byte, 8 bits per byte, etc. The bytes referenced in this document are assumed to be 8 bits per byte (octet).
Consultative Committee for Space Data Systems	Consultative Committee for Space Data Systems is an organization officially established by management of member space agencies for addressing data system problems with accompanying recommended technical solutions.
Data Packets	A variable length, delimited data structure encapsulating sets of higher-layer user data within a standard header message.
High Rate Data Link	High Rate Data Link is a fiber optic network interface capable of transferring up to 100 Mbps of data point to point. The length of a CCSDS packet for a HRDL interface with the HRFM can range from 100 bytes to 4096 bytes. Payloads can also transfer data to other payloads over the HRDL and the protocols/format for transfer is up to the payloads.
Least Significant Bit	The low-order bit within a multiple bit field.

## Limit Sensing

The Payload MDM–provided limit sensing feature was designed to support data sampled at a rate of 1 Hz or once per second. The parameter selected to be limit sensed is checked once per second and an out–of–limits counter will be incremented if the parameter is found to be out–of–limits. The maximum number of sequential out–of–limits checks that can be requested and performed on any one parameter is 60 for data sampled at a 1 Hz rate or 60 out–of–limit conditions in a 1 minute interval before the parameter is flagged as being in error. If the number of out–of–limits is requested to be 30, then the parameter out–of–limit flag will be set after 30 sequential out–of–limit conditions were sensed; if the condition is not sequential, the counter will reset. For 0.1 Hz data, the maximum number of sequential data checks will be 6. This is the result of the parameters being checked 10 times per second resulting in the maximum number of varying parameters only being checked 30 times (i.e. 9 stale parameters being checked every second). Data being sampled at a rate higher than 1 per second will have to use an alternate method.

## Local Area Network

Local Area Network (LAN) is the Ethernet network used for MRDL data with data rates up to 10 Mbps.

## Low Rate Data Link

Low Rate Data Link (LRDL) refers to data packet communications over the MIL–STD–1553 data bus.

<b>TERM</b>	<b>DEFINITION</b>
Logical Data Path	The LDP is the path used for transferring user data between a known source and destination as derived from the APID table. The management between relay points in the link are predefined by configuration tables using the APID as a reference to select the proper Path ID.
Medium Rate Data Link	Medium Rate Data Link (MRDL) refers to data packet communications over the Local Area Network (ether network) with data rates within a packet of 100 to 1500 eight bit bytes.
Most Significant Bit	The high-order bit within a multiple bit field.
Octet	A word length equal to an 8-bit byte.
Payload Ethernet Hub/Gateway	PEHG is a central hub or repeater for distributing input IEEE 802.3 packets to all active output ports.
Payload Integrator	Payload Integrator (PI) is responsible for integrating payloads into an ISPR or onto an attached carrier.
Program Unique Identifier	There are 5 basic types of Program Unique Identifiers (PUIs) used for ISS software and data systems identification. The PUIs are uniquely defined and are used for identification of (1) software requirements, (2) ISS signals generated or utilized by the design elements, (3) hardware and software devices, (4) buses utilized by the ISS MDMs and Firmware Controllers, and (5) state conversion and calibration curves required to interpret data signals.
Telemetry	A term used to characterize the generation of continuous and predictable sets of space mission measurement data which have a large interaction with overall communications resources.
Timeliner	The Timeliner is a piece of Government Furnished Software that is included in the Command and Control (C&C) MDM and the Payload MDM. It is an automated procedure executive which can be used to execute a string of commands based on both time of execution and/or logical expressions.
Timeliner Bundles	The Timeliner "bundles" refer to the set of procedures used to control the invocation of the 1 Hz cyclic Timeliner Executor tasks.
Word	Words as used in this document consist of 16 bits.



**APPENDIX A****TABLE OF CONTENTS**

TABLE		PAGE
A-ii	PAYLOAD SELECTION SCREEN .....	A – 9
A-iii	PAYLOAD DATA SCREEN .....	A – 14
A-1	PARAMETER CORRELATION NUMBER IDENTIFICATION .....	A – 18
A-2	HOSC/POIC TELEMETRY MEASUREMENT DEFINITION .....	A – 21
A-3	HOSC/POIC TELEMETRY POINT PAIR DEFINITION .....	A – 23
A-4	HOSC/POIC TELEMETRY POLYNOMIAL DEFINITION .....	A – 26
A-5	HOSC/POIC TELEMETRY STATE CODE DEFINITION .....	A – 28
A-6	HOSC/POIC TELEMETRY CALIBRATION SWITCHING .....	A – 30
A-7	HOSC/POIC EXPECTED STATE DEFINITION .....	A – 32
A-8	HOSC/POIC LIMIT SENSING DEFINITION .....	A – 35
A-9	HOSC/POIC LIMIT SWITCH DEFINITION .....	A – 37
A-10	LRDL PACKET DEFINITION .....	A – 40
A-11	MRDL PACKET DEFINITION .....	A – 43
A-12	HRDL PACKET DEFINITION .....	A – 46
A-13	PACKET DEFINITION .....	A – 48
A-14	SUBSET FORMAT DEFINITION .....	A – 51
A-15	SUBSET RANGE SAMPLING DEFINITION .....	A – 53
A-16	SUBSET COUNTER SAMPLING DEFINITION .....	A – 55
A-17	TELEMETRY PACKET DEFINITION .....	A – 58
A-18	TELEMETRY PACKET RANGE SAMPLE DEFINITION .....	A – 60
A-19	TELEMETRY PACKET COUNTER SAMPLE DEFINITION .....	A – 63
A-20	HEALTH STATUS INITIALIZATION .....	A – 65
A-21	HEALTH AND STATUS REQUIREMENTS .....	A – 68
A-22	HEALTH AND STATUS WORD DEFINITIONS .....	A – 71
A-23	HEALTH AND STATUS PAYLOAD MDM LIMIT CHECK DEFINITION .....	A – 74
A-24	HEALTH AND STATUS PCS POLYNOMIAL CALIBRATION DEFINITION .....	A – 77
A-25	HEALTH AND STATUS PCS LINEAR CALIBRATION DEFINITION ...	A – 79
A-26	HEALTH AND STATUS PCS LIMIT CHECK SERVICE DEFINITION ...	A – 81
A-27	COMMAND CORRELATION INITIALIZATION AND COMMAND SOURCE REQUIREMENT .....	A – 84
A-28	PCS COMMAND DEFINITION .....	A – 86
A-29	PAYLOAD MDM COMMAND DEFINITION .....	A – 89
A-30	COMMAND DEFINITION .....	A – 92
A-31	COMMAND TELEMETRY VERIFICATION DEFINITION .....	A – 94
A-32	COMMAND DEFINITION #3 .....	A – 98
A-33	COMMAND POINT PAIR CALIBRATION DEFINITION .....	A – 102

**TABLES (Continued)**

TABLE	PAGE
-------	------

**APPENDIX A****TABLE OF CONTENTS (Continued)**

TABLE		PAGE
A-34	COMMAND STATE CODE CALIBRATION DEFINITION .....	A - 104
A-35	COMMAND POLYNOMIAL CALIBRATION DEFINITION .....	A - 106
A-36	COMMAND CALIBRATION SWITCHING DEFINITION .....	A - 108
A-37	POP-UP BROADCAST DATA IDENTIFICATION AND PAYLOAD UNIQUE ANCILLARY DATA SET .....	A - 110
A-38	ANCILLARY DATA REQUEST FORM .....	A - 112
A-39	LRDL FILE TRANSFER SERVICE .....	A - 114
A-40	TIMELINER DEFINITION .....	A - 117
A-41	PCS DISPLAY DEFINITION .....	A - 119
A-42	VIDEO REQUIREMENTS .....	A - 121
A-43	UNFINISHED SCREENS .....	A - 123
A-44	CUSTOMER CONTACT INFORMATION .....	A - 125
A-45	GENERAL INFORMATION .....	A - 127
A-46	PAYLOAD DESCRIPTION .....	A - 129

FIGURE		PAGE
A-i	PDL C&DH TABLE RELATIONSHIPS AND FLOW CHART .....	A - 8
A-ii	INSTRUCTIONS FOR COMPLETING PAYLOAD SELECTION SCREEN FOR INTEGRATION (TABLE A-ii) .....	A - 9
A-iii	INSTRUCTIONS FOR COMPLETING PAYLOAD DATA SCREEN (TABLE A-iii) .....	A - 10
A-1	INSTRUCTIONS FOR COMPLETING PARAMETER CORRELATION NUMBER ENTRY (TABLE A-1) .....	A - 16
A-2	INSTRUCTIONS FOR COMPLETING HOSC/POIC TELEMETRY MEASUREMENT DEFINITION (TABLE A-2) .....	A - 19
A-3	INSTRUCTIONS FOR COMPLETING HOSC/POIC TELEMETRY POINT PAIR DEFINITION (TABLE A-3) .....	A - 22
A-4	INSTRUCTIONS FOR COMPLETING HOSC/POIC TELEMETRY POLYNOMIAL DEFINITION (TABLE A-4) .....	A - 24
A-5	INSTRUCTIONS FOR COMPLETING HOSC/POIC TELEMETRY STATE CODE DEFINITION (TABLE A-5) .....	A - 27
A-6	INSTRUCTIONS FOR COMPLETING HOSC/POIC TELEMETRY CALIBRATION SWITCHING (TABLE A-6) .....	A - 29
A-7	INSTRUCTIONS FOR COMPLETING HOSC/POIC EXPECTED STATE DEFINITION (TABLE A-7) .....	A - 31
A-8	INSTRUCTIONS FOR COMPLETING HOSC/POIC LIMIT SENSING DEFINITION (TABLE A-8) .....	A - 33
A-9	INSTRUCTIONS FOR COMPLETING HOSC/POIC LIMIT SWITCH DEFINITION (TABLE A-9) .....	A - 36
A-10	INSTRUCTIONS FOR COMPLETING LRDL PACKET DEFINITION (TABLE A-10) .....	A - 38

**APPENDIX A****TABLE OF CONTENTS (Continued)**

FIGURE		PAGE
A-11	INSTRUCTIONS FOR COMPLETING MRDL PACKET DEFINITION (TABLE A-11) .....	A - 41
A-12	INSTRUCTIONS FOR COMPLETING HRDL PACKET DEFINITION (TABLE A-12) .....	A - 44
A-13	INSTRUCTION FOR COMPLETING PACKET DEFINITION (TABLE A-13) .....	A - 47
A-14	INSTRUCTIONS FOR COMPLETING SUBSET FORMAT DEFINITION (TABLE A-14) .....	A - 49
A-15	INSTRUCTIONS FOR COMPLETING SUBSET RANGE SAMPLING DEFINITION (TABLE A-15) .....	A - 52
A-16	INSTRUCTIONS FOR COMPLETING SUBSET COUNTER SAMPLING DEFINITION (TABLE A-16) .....	A - 54
A-17	INSTRUCTIONS FOR COMPLETING TELEMETRY PACKET DEFINITION (TABLE A-17) .....	A - 56
A-18	INSTRUCTIONS FOR COMPLETING TELEMETRY PACKET RANGE SAMPLE DEFINITION (TABLE A-18) .....	A - 59
A-19	INSTRUCTIONS FOR COMPLETING TELEMETRY PACKET COUNTER SAMPLE DEFINITION (TABLE A-19) .....	A - 61
A-20	INSTRUCTIONS FOR COMPLETING HEALTH AND STATUS INITIALIZATION (TABLE A-20) .....	A - 64
A-21	INSTRUCTIONS FOR COMPLETING HEALTH AND STATUS SERVICE REQUIREMENTS (TABLE A-21) .....	A - 66
A-22	INSTRUCTIONS FOR COMPLETING HEALTH AND STATUS WORD DEFINITIONS (TABLE A-22) .....	A - 69
A-23	INSTRUCTIONS FOR COMPLETING HEALTH AND STATUS PAYLOAD MDM LIMIT CHECK DEFINITION (TABLE A-23) .....	A - 72
A-24	INSTRUCTIONS FOR COMPLETING HEALTH AND STATUS PCS POLYNOMIAL CALIBRATION DEFINITION (TABLE A-24) .....	A - 75
A-25	INSTRUCTIONS FOR COMPLETING HEALTH AND STATUS PCS LINEAR CALIBRATION DEFINITION (TABLE A-25) .....	A - 78
A-26	INSTRUCTIONS FOR COMPLETING HEALTH AND STATUS PCS LIMIT CHECK SERVICE DEFINITION (TABLE A-26) .....	A - 80
A-27	INSTRUCTIONS FOR COMPLETING COMMAND CORRELATION NUMBER ENTRY AND COMMAND SOURCE REQUIREMENTS (TABLE A-27) .....	A - 82
A-28	INSTRUCTIONS FOR COMPLETING PCS COMMAND DEFINITION (TABLE A-28) .....	A - 85
A-29	INSTRUCTIONS FOR COMPLETING PAYLOAD MDM COMMAND DEFINITION (TABLE A-29) .....	A - 87
A-30	INSTRUCTIONS FOR COMPLETING COMMAND DEFINITION (TABLE A-30) .....	A - 90
A-31	INSTRUCTIONS FOR COMPLETING COMMAND TELEMETRY VERIFICATION DEFINITION (TABLE A-31) .....	A - 93

**APPENDIX A****TABLE OF CONTENTS (Continued)**

FIGURE		PAGE
A-32	INSTRUCTIONS FOR COMPLETING COMMAND DEFINITION #3 (TABLE A-32) .....	A - 95
A-33	INSTRUCTIONS FOR COMPLETING COMMAND POINT PAIR CALIBRATION DEFINITION (TABLE A-33) .....	A - 101
A-34	INSTRUCTIONS FOR COMPLETING COMMAND STATE CODE CALIBRATION DEFINITION (TABLE A-34) .....	A - 103
A-35	INSTRUCTIONS FOR COMPLETING COMMAND POLYNOMIAL CALIBRATION DEFINITION (TABLE A-35) .....	A - 105
A-36	INSTRUCTIONS FOR COMPLETING COMMAND CALIBRATION SWITCHING DEFINITION (TABLE A-36) .....	A - 107
A-37	INSTRUCTIONS FOR COMPLETING POP-UP BROADCAST DATA IDENTIFICATION AND PAYLOAD UNIQUE ANCILLARY DATA SET (TABLE A-37) .....	A - 109
A-38	INSTRUCTIONS FOR COMPLETING ANCILLARY DATA REQUEST FORM (TABLE A-38) .....	A - 111
A-39	INSTRUCTIONS FOR COMPLETING LRDL FILE TRANSFER SERVICE (TABLE A-39) .....	A - 113
A-40	INSTRUCTIONS FOR COMPLETING TIMELINER DEFINITION (TABLE A-40) .....	A - 115
A-41	INSTRUCTIONS FOR COMPLETING PCS DISPLAY DEFINITION (TABLE A-41) .....	A - 118
A-42	INSTRUCTIONS FOR COMPLETING VIDEO REQUIREMENTS (TABLE A-42) .....	A - 120
A-43	INSTRUCTIONS FOR COMPLETING UNFINISHED SCREENS (TABLE A-43) .....	A - 122
A-44	INSTRUCTIONS FOR COMPLETING CUSTOMER CONTACT INFORMATION (TABLE A-44) .....	A - 124
A-45	INSTRUCTIONS FOR COMPLETING GENERAL INFORMATION (TABLE A-45) .....	A - 126
A-46	INSTRUCTIONS FOR COMPLETING PAYLOAD DESCRIPTION (TABLE A-46) .....	A - 128

## **APPENDIX A**

### **PAYLOAD TELEMETRY AND COMMAND TABLE DEFINITIONS**

The definitions in Appendix A describe each field appearing in the following tables. The Payload Developer will provide the necessary data to define the ISS software processing requirements using these tables. These tables define the specific data parameters generated or required by the payload; the data packets transmitted or received by payload; the conversion coefficients or state codes required for displaying the data; the specific commands to control the payload; and the command data packets transmitted to the payload. The instructions for completing each table are provided followed by the applicable table format. Unshaded regions of the tables denote data fields that are to be completed by the Payload Developer. Shaded regions denote data fields that are to be completed by Payload Engineering Integration or other ISS integration organizations. Shaded regions may also denote data fields that are auto populated, i.e., automatically filled in based on previous table entries.

Figure A–i identifies relationships between the tables. Tables under the Log–on heading include Table A–ii for payload selection and Table A–iii for payload data which queries the user for relevant information regarding payload name, flight effectivity and other payload detail.

Tables under the Main Decision heading allow the user to select from various data entry categories. Table headings A–1 through A–46 capture the relevant data for each of these categories.

- Table A–1 is used to initialize payload parameters and identify the necessary processing requirements.
- Table A–2 is used to define the HOSC/POIC telemetry Measurement Definitions.
- Table A–3 is used to define the HOSC/POIC Parameters requiring Point Pair Calibration.
- Table A–4 is used to define the HOSC/POIC Parameters requiring Polynomial Calibration.
- Table A–5 is used to define the HOSC/POIC Parameters requiring State Code Calibration.
- Table A–6 is used to define the HOSC/POIC Parameters requiring Calibration Switching.
- Table A–7 is used to define the HOSC/POIC Parameters requiring Expected State Services.
- Table A–8 is used to define the HOSC/POIC Parameters requiring Limit Sensing Services.
- Table A–9 is used to define the HOSC/POIC Parameters requiring Limit Switching.
- Table A–10 is used to define Payload LDRL Data Packets which will be downlinked to the ground. Multiple data packets may be defined within this table.

- Table A–11 is used to define Payload MDRL Data Packets which will be downlinked to the ground. Multiple data packets may be defined within this table.
- Table A–12 is used to define Payload HDRL Data Packets which will be downlinked to the ground. Multiple data packets may be defined within this table.
- Table A–13 is used to define the Packet definition of the data.
- Table A–14 is used to define the Subset Data Format of the packet.
- Table A–15 is used to define the Subset Range Sampling data of the packet.
- Table A–16 is used to define the Subset Counter Sampling data of the packet.
- Table A–17 is used to define the Telemetry Packet Definitions.
- Table A–18 is used to define the Telemetry Packet Data requiring Range Sampling.
- Table A–19 is used to define the Telemetry Packet Data requiring Counter Sampling.
- Table A–20 is used to initialize the Health and Status screen.
- Table A–21 defines the Telemetry data requiring Health and Status Services.
- Table A–22 defines the Health and Status Word Definitions.
- Table A–23 is used to define the Health and Status data requiring Payload MDM Limit Check.
- Table A–24 is used to define the Health and Status data requiring PCS Polynomial Calibration.
- Table A–25 is used to define the Health and Status data requiring PCS Linear Calibration.
- Table A–26 is used to define the Health and Status data requiring PCS Limit Check Service.
- Table A–27 defines all payload commands.
- Table A–28 defines all PCS Initiated payload commands.
- Table A–29 defines all PLMDM Initiated payload commands.
- Table A–30 defines all POIC/Ground Initiated payload commands.
- Table A–31 defines all POIC/Ground Initiated payload command Telemetry Verifiers.

- Table A–32 defines all POIC/Ground Initiated payload command definitions.
- Table A–33 is used to define the Commands requiring Point Pair Calibration.
- Table A–34 is used to define the Commands requiring State Code Calibration.
- Table A–35 is used to define the Commands requiring Polynomial Calibration.
- Table A–36 is used to define the Commands requiring Calibration Switching.
- Table A–37 Popup is used to designate use of Broadcast Time or Ancillary Data.
- Table A–37 is used to define a payload requirement for the Payload Unique Ancillary Data Set.
- Table A–38 is used to define payload unique ancillary data packets required by the payload. The system parameters which are available for consideration as Ancillary Data Parameters may be found in SSP 41175–02, Appendix A. Additional information is available at the Data Integration Team (DIT) home Page at the following URL: <http://ditapp01.jsc.nasa.gov/>. Assistance in using this site is available from PEI. Multiple data packets may be defined within these tables.
- Table A–39 is used to define the Data Files to be transferred to and from the payload MDM.
- Table A–40 is used to define the telemetry data requiring Timeliner Service.
- Table A–41 is used to define the parameters required to be displayed on PCS and the associated display names.
- Table A–42 defines the video interfaces.
- Table A–43 is used to define the unfinished screens of the payload data.
- Table A–44 is used to record customer contact information.
- Table A–45 is used to record payload general information.
- Table A–46 is used to record a payload description.

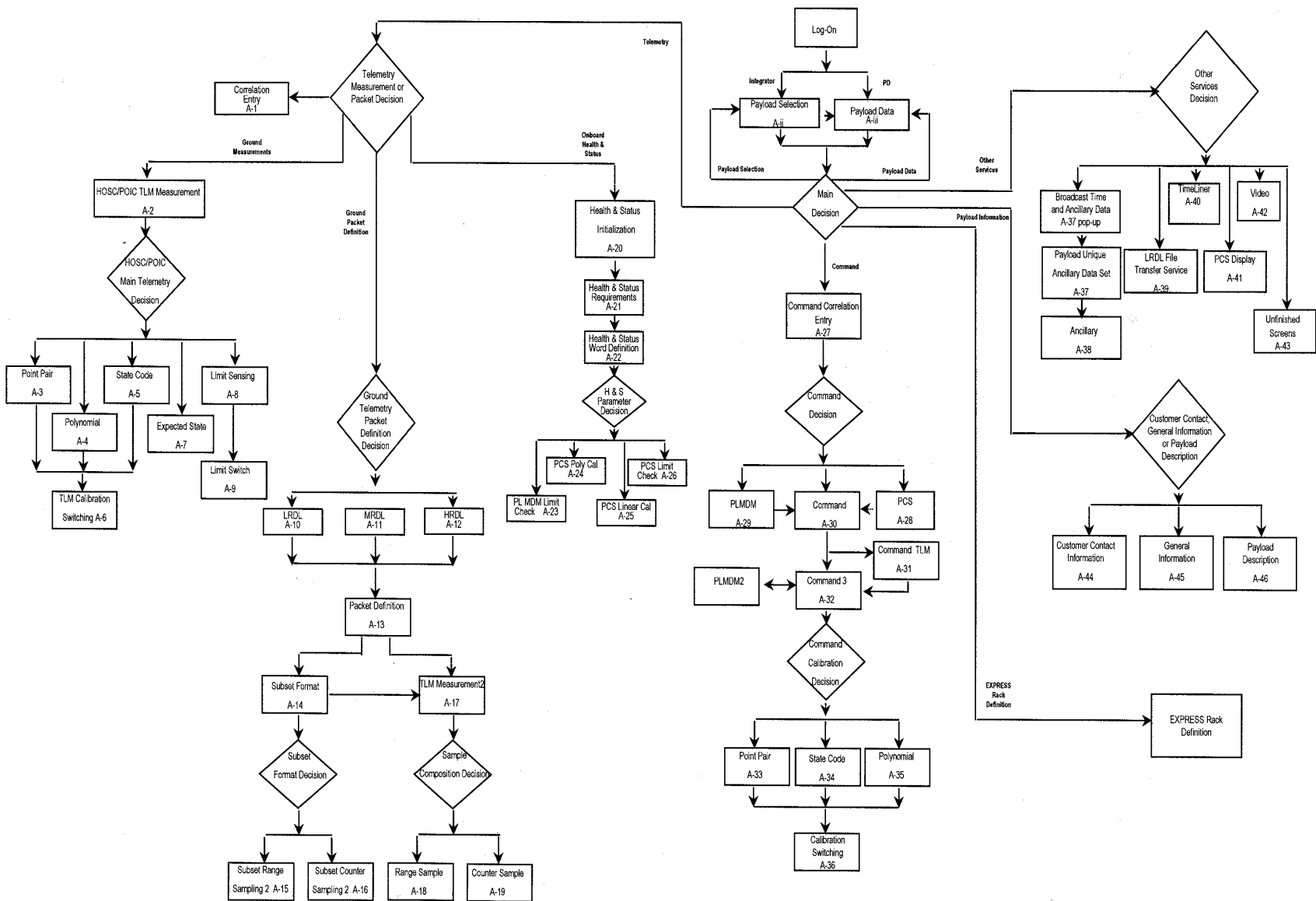


FIGURE A-i PDL C&amp;DH TABLE RELATIONSHIPS AND FLOW CHART



FIGURE A–ii INSTRUCTIONS FOR COMPLETING PAYLOAD SELECTION SCREEN FOR INTEGRATION (TABLE A–ii)

Data Field	Field Type	Length	Description	Allowed Range	Definition Responsibility
Payload Rack			Select from the list of all EXPRESS Rack and Facility Racks manifested to fly in the USL.		PEI
Flight Effectivity	character	5	Select the flight number to indicate flight effectivity for the selected Payload Rack. Changes to the payload between flights will be maintained in the same database and this field provides a means of determining which parameters pertain to a specific flight. Also this field will provide a means for configuration management of changes occurring after turnover of payload to launch provider (e.g. 7A.1, UF1, UF2, 1J/A).		PEI
Dataset Development Level	character	11	Select a data development level for the selected payload. Choose from Preliminary, Interim and Final.	Preliminary Interim Final	PEI
Subrack Payload			Select from the list of all subrack payload assigned to the selected rack for the selected Flight Effectivity.		PEI

TABLE A–ii PAYLOAD SELECTION SCREEN

Payload Rack	
Flight Effectivity	
Data Set Development Level	
Subrack Payload	

**FIGURE A–iii INSTRUCTIONS FOR COMPLETING PAYLOAD DATA SCREEN (TABLE A–iii)**  
**(Page 1 of 4)**

Data Field	Field Type	Length	Description	Allowed Range	Definition Responsibility
<b>PAYLOAD DESCRIPTION</b>					
Payload Name	character	80	Enter full name of the payload.		PD
Payload Acronym	character	15	Enter acronym or short name of the payload.		PD
Payload ID	character	10	An alphanumeric identification code assigned to each unique payload for data management and tracking purposes.		PDL/Program Office
Payload Sub–Element Title	character	60	Enter the description of the payload sub–element		PD
Payload Sub–Element Acronym	character	20	Enter the alphanumeric identification code assigned to each unique payload sub–element. Must be unique for PDL.		PD
Subset ID	integer	5	A numeric identifier of the payload/ subrack payload. This is the value that will be inserted into word 8 of the CCSDS header for transmitted data of commands to this payload.	0–65535	PEI/EI
Payload Index	number	3	Payload identifier used by the PLMDM to reference payloads. Assigned by PSIV.	0–200	PSIV
Rack Assignment	character	6	Facility/Express Rack Assignment for this subrack payload.	EXPRESS Racks	EI/FD
Flight Effectivity	character	5	This field is defined in the instructions for the Payload Selection Screen.		FD/PEI/EI/Flight Manifest
Rack Location	character	6	The physical location of the payload within the USL.	Rack Location table from D684–10056–01, Appendix U.	PEI
Logical Data Path (LDP)	integer	3	The LDP will be automatically populated from a look–up table once the rack location is entered (for commands).	LDP table obtained from D684–10056–01, Appendix U.	Automated
Payload Type/Element	hex number	2	Select from the list of Payload Types defined in the SSPS D 684–10056–01 Appendix A.		PD

**FIGURE A-iii INSTRUCTIONS FOR COMPLETING PAYLOAD DATA SCREEN (TABLE A-iii)**  
**(Page 2 of 4)**

Data Field	Field Type	Length	Description	Allowed Range	Definition Responsibility
Functional System	character	1	Currently this value will be a Z		PEI
Generic Device Code	character	3	Assigned by PEI.		PEI
Group Assembly	character	2	Currently this value will be assigned by PEI		PEI
<b>PAYLOAD NETWORK PARAMETERS</b>					
Remote Terminal Address	integer	2	Enter the wired address of the MIL-STD-1553 (LRDL) Payload Remote Terminal. If a rack location has been selected from the Payload Data Screen, the Payload Remote Terminal address will be automatically assigned.	8 – 28 decimal	PD
Remote Terminal Maximum Acceptable Latency	integer	5	Enter the maximum acceptable latency for transmitted data from the payload via LRDL.	1 – 99999 decimal or NR (No requirement) (milliseconds)	PD
LAN-1 Gateway Source Address	character	12	Enter the Payload Ethernet Media Access Control (MAC) source address for the LAN-1 Gateway interface.	00 00 00 00 00 00 – FF FF FF FF FF FF – ring hex notation	PD
LAN-1 Gateway Source Buffer Size	integer	5	Enter the size of the buffer used to store payload downlink data during LAN-1 Ethernet bus contention.	0 – 99999 decimal (kbytes)	PD
LAN-2 Gateway Source Address	character	12	Enter the Payload Ethernet MAC source address for the LAN-2 Gateway interface.	00 00 00 00 00 00 FF FF FF FF FF FF – ring hex notation	PD
LAN-2 Gateway Source Buffer Size	integer	5	Enter the size of the buffer used to store payload downlink data during LAN-2 ethernet bus contention.	0 – 99999 decimal (kbytes)	PD

**FIGURE A-iii INSTRUCTIONS FOR COMPLETING PAYLOAD DATA SCREEN (TABLE A-iii)**  
**(Page 3 of 4)**

<b>Data Field</b>	<b>Field Type</b>	<b>Length</b>	<b>Description</b>	<b>Allowed Range</b>	<b>Definition Responsibility</b>
LAN-1 Gateway Destination Maximum Acceptable Latency	integer	5	Enter the maximum acceptable message delay for downlink data from the payload via LAN-1 MRDL.	1 – 99999 decimal or NR (no requirement) (milliseconds)	PD
LAN-2 Gateway Destination Maximum Acceptable Latency	integer	5	Enter the maximum acceptable message delay for downlink data from the payload via LAN-2 MRDL.	1 – 99999 decimal or NR (no requirement) (milliseconds)	PD
LAN-1 Rack-to-Rack Source Address	character	12	Enter the Payload Ethernet MAC source address for the LAN-1 rack-to-rack interface	00 00 00 00 00 00 – FF FF FF FF FF FF ring hex notation	PD
LAN-2 Rack-to-Rack Source Address	integer	12	Enter the Payload Ethernet MAC source address for the LAN-2 rack-to-rack interface.	00 00 00 00 00 00 – FF FF FF FF FF FF ring hex notation	PD
LAN-1 Rack-to-Rack Destination Address	character	12	Enter the Payload Ethernet MAC destination address for the LAN-1 rack-to-rack interface	00 00 00 00 00 00 – FF FF FF FF FF FF ring hex notation	PD
LAN-2 Rack-to-Rack Destination Address	character	12	Enter the Payload Ethernet MAC destination address for the LAN-2 rack-to-rack interface.	00 00 00 00 00 00 – FF FF FF FF FF FF ring hex notation	PD
LAN-1 Rack-to-Rack Destination Maximum Acceptable Latency	integer	5	Enter the maximum acceptable message delay for rack-to-rack data from the payload via LAN-1 MRDL	1 – 99999 decimal or NR (no requirement) (milliseconds)	PD

**FIGURE A-iii INSTRUCTIONS FOR COMPLETING PAYLOAD DATA SCREEN (TABLE A-iii)**  
**(Page 4 of 4)**

<b>Data Field</b>	<b>Field Type</b>	<b>Length</b>	<b>Description</b>	<b>Allowed Range</b>	<b>Definition Responsibility</b>
LAN-2 Rack-to Rack Destination Maximum Acceptable Latency	integer	5	Enter the maximum acceptable message delay for rack-to-rack data from the payload via LAN-2 MRDL.	1 – 99999 decimal or NR (no requirement) (milliseconds)	PD
Internet Protocol Range	character	16	Enter the range of Internet Protocol addresses used by this payload, from lowest to highest.	xxx.xxx.xxx.xxx-xxx 1 – 255 decimal for each group, total 4 groups in dot notation	PD

**TABLE A–iii PAYLOAD DATA SCREEN**  
**(Page 1 of 2)**

<b>PAYLOAD DESCRIPTION</b>	
Payload Name	
Payload Acronym	
Payload ID	
Payload Sub–Element Title	
Payload Sub–Element Acronym	
Subset ID	
Payload Index	
Rack Assignment	
Flight Effectivity	
Rack Location	
LDP	
Payload Type/Element	
Functional System	
Generic Device Code	
Group Assembly	
<b>PAYLOAD NETWORK PARAMETERS</b>	
Remote Terminal	
Address	
Buffer Size	
Maximum Acceptable Latency	
LAN–1 Gateway Source	
Address	
Buffer Size	
LAN–2 Gateway Source	
Address	

**TABLE A-iii PAYLOAD DATA SCREEN**  
**(Page 2 of 2)**

Buffer Size	
LAN-1 Gateway Destination	
Address	0002 7D01 0201
Buffer Size	64 bytes
Maximum Acceptable Latency	
LAN-2 Gateway Destination	0002 7D01 0202
Address	64 kbytes
Buffer Size	
Maximum Acceptable Latency	
LAN-1 Rack-to-Rack Source	
Address	
Buffer Size	
LAN-2 Rack-to-Rack Source	
Address	
Buffer Size	
LAN-1 Rack-to-Rack Destination	
Address	
Maximum Acceptable Latency	
LAN-2 Rack-to-Rack Destination	
Address	
Maximum Acceptable Latency	
Internet Protocol	
Address Range	

**FIGURE A–1 INSTRUCTIONS FOR COMPLETING PARAMETER CORRELATION NUMBER ENTRY (TABLE A–1)**  
**(Page 1 of 2)**

<b>Data Field</b>	<b>Field Type</b>	<b>Length</b>	<b>Description</b>	<b>Allowed Range</b>	<b>Definition Responsibility</b>
Parameter Correlation Number	character	7	Enter a unique identifier to each measurement. The first three characters should be an alphanumeric identifier which should be used to group associated payload measurements. The remaining characters should be numeric and in sequential order for each of the three alphanumeric identifiers (i.e., each alphanumeric set should start with the number 1). This field is used to correlate the data between tables and with the PEI.		PD
Parameter/ Technical Name	character	89	Enter a unique name to identify this parameter.		PD
Parameter Description	character	250	Enter the complete text that describes the payload generated data.		PD
Primitive PUI	character	13	Enter the telemetry Program Unique Identifier (PUI) primitive/group level measurement. This PUI is used to process this parameter onboard and on the ground.		PEI
Signal Type	character	1	Choose from a list defined from the SSPS D684–100056–01 Appendix E.	A = Acceleration B = Phase Electrical/ Electromagnetic Field/ Light C = Current D = Vibration E = Electrical Power F = Frequency	PD



**FIGURE A–1 INSTRUCTIONS FOR COMPLETING PARAMETER CORRELATION NUMBER ENTRY (TABLE A–1)**  
**(Page 2 of 2)**

<b>Data Field</b>	<b>Field Type</b>	<b>Length</b>	<b>Description</b>	<b>Allowed Range</b>	<b>Definition Responsibility</b>
Health & Status	character	1	Check this box if this parameter is a Health & Status parameter; otherwise, leave blank. This field is a flag to indicate that this parameter is part of the Health and Status data produced by the payload. If the Health & Status box is checked, then the HOSC/POIC Processed Telemetry box will be auto checked. If this box is checked, then the Health & Status field in the Software Interface Summary Table will contain an "X", and the Health and Status – Ground Processing (POIC) field in the Software Interface Summary Table will contain an "X".		PD
HOSC/POIC Processed Telemetry	character	1	Check this box if the parameter will be processed at the HOSC/POIC; otherwise, leave blank. If the Health and Status box is checked, then this box will be auto checked.		PD
Viewed by/ Passed through MPLM (Shuttle)	character	1	Check this box if this parameter will be viewed by or passed through the MPLM (Shuttle).		PD
Safety Data	character	1	Check this box if this parameter is safety related; otherwise, leave blank. This field is a flag to indicate that this parameter is safety related and must have the Health and Status Box checked. If this box is checked, the Health and Status – Safety Parameter field then in the Software Interface Summary Table will contain an "X".		PD

TABLE A-1 PARAMETER CORRELATION NUMBER IDENTIFICATION

Parameter Correlation Number	Parameter/ Technical Name	Parameter Description	Primitive PUI	Signal Type	Health & Status	HOSC/POIC Processed Telemetry	Viewed by/ Pass/through MPLM	Safety Data

**FIGURE A-2 INSTRUCTIONS FOR COMPLETING HOSC/POIC TELEMETRY MEASUREMENT DEFINITION (TABLE A-2)**  
(Page 1 of 2)

Data Field	Field Type	Length	Description	Allowed Range	Definition Responsibility
Parameter Correlation Number	character	7	Parameter Correlation Number that was entered in Table A-1	Auto Populated from parameters that were entered in Table A-1 and marked as POIC processed.	PD
Parameter/Technical Name	character	89	Parameter/Technical Name that was entered in Table A-1	Auto Populated from parameters that were entered in Table A-1 and marked as POIC processed.	PD
Data Type	character	5	Enter the Data Type that defines how the data is represented and how the data is to be processed.	See MSFC-STD-1274 Appendix B for description of data types (i.e. IUNS, ....)	PD
Calibration Type	character	2	Enter the type of calibration conversion process.	N – No Calibration PC – Polynomial PP – Point Pair SC – State Code	PD
Low Raw Counts	integer	12	Enter the decimal number corresponding to the minimum expected binary count. Does not apply to floating points or character strings.		PD
High Raw Counts	integer	12	Enter the decimal number corresponding to the maximum expected binary count. Does not apply to floating points or character strings.		PD
Calibration Switching	character	1	Check this box if this parameter requires calibration switching. If selected, limit switching is not available.		PD
Expected State	character	1	Check this box if this parameter requires expected state. If checked, do not allow Limit Sensing to be checked without unchecking Expected State.		PD

**FIGURE A-2 INSTRUCTIONS FOR COMPLETING HOSC/POIC TELEMETRY MEASUREMENT DEFINITION (TABLE A-2)**  
**(Page 2 of 2)**

<b>Data Field</b>	<b>Field Type</b>	<b>Length</b>	<b>Description</b>	<b>Allowed Range</b>	<b>Definition Responsibility</b>
Limit Sensing	character	1	Check this box if this parameter requires limit sensing. If checked, do not allow Expected State to be checked without unchecking Limit Sensing.		PD
Limit Switching	character	1	Check this box if this parameter requires limit switching. Must have selected Limit Sensing to be able to Limit Switch.		PD
Proprietary	character	1	Check this box if this parameter is proprietary. If the Health and Status box has been checked for this parameter, then this box must be unchecked.		PD
Counter Parameter	character	1	Check this box if this parameter will be used as a telemetry counter from which other parameters may be adjusted.		PD

TABLE A-2 HOSC/POIC TELEMETRY MEASUREMENT DEFINITION

Parameter Correlation Number	Parameter/ Technical Name	Data Type	Calibration Type	Low Raw Counts	High Raw Counts	Calibration Switching	Expected State	Limit Sensing	Limit Switching	Proprietary	Counter Parameter

**FIGURE A-3 INSTRUCTIONS FOR COMPLETING HOSC/POIC TELEMETRY POINT PAIR DEFINITION (TABLE A-3)**

<b>Data Field</b>	<b>Field Type</b>	<b>Length</b>	<b>Description</b>	<b>Allowed Range</b>	<b>Definition Responsibility</b>
Parameter Correlation Number	character	7	Parameter correlation number that was selected as requiring point pair calibration from Table A-2.	Auto Populated from parameters that were selected in Table A-2.	PD
Parameter/Technical Name	character	89	Parameter/technical name that was selected as requiring point pair calibration from Table A-2.	Auto Populated from parameters that were selected in Table A-2.	PD
Primitive PUI	character	13	Primitive PUI that was selected as requiring point pair calibration from Table A-2.	Auto Populated from parameters that were selected in Table A-2.	PEI
Default Set Number	integer	2	Enter the set number of the default calibration set. If calibration switching was not selected, then default calibration set number can only be 1.	Min = 1 Max = 32	PD
Set Number	integer	2	Enter the unique number for each set of point pairs. If calibration switching was not selected, then only one set number can be defined.	Min = 1 Max = 32	PD
Sequence Number	integer	2	Enter the unique number for each point pair within a calibration set.	Min = 1 Max = 21	PD
Engineering Units	character	10	Enter the engineering units associated with this calibration set for this parameter.		PD
Pair Count	integer	12	Enter the decimal integer representing the raw count value of the point pair.		PD
Pair Value	float	16	Enter the engineering unit equivalent of the COUNTS column. Include sign and decimal point, if applicable.		PD

TABLE A-3 HOSC/POIC TELEMETRY POINT PAIR DEFINITION

Parameter Correlation Number	Parameter/ Technical Name	Primitive PUI	Default Set Number	Set Number	Sequence Number	Engineering Units	Pair Count	Pair Value

**FIGURE A-4 INSTRUCTIONS FOR COMPLETING HOSC/POIC TELEMETRY POLYNOMIAL DEFINITION (TABLE A-4)**  
**(Page 1 of 2)**

Data Field	Field Type	Length	Description	Allowed Range	Definition Responsibility
Parameter Correlation Number	character	7	Parameter correlation number that was selected as requiring polynomial calibration from Table A-2.	Auto Populated from parameters that were selected in Table A-2.	PD
Parameter/ Technical Name	character	89	Parameter/technical name that was selected as requiring polynomial calibration from Table A-2.	Auto Populated from parameters that were selected in Table A-2.	PD
Primitive PUI	character	13	Primitive PUI that was selected as requiring polynomial calibration from Table A-2.	Auto Populated from parameters that were selected in Table A-2.	PEI
Default Set Number	integer	2	Enter the set number of the default calibration set. If calibration switching was not selected, then default calibration set number can only be 1.	Min = 1 Max = 32	PD
Set Number	integer	2	Enter the sequential number for the set of coefficients with a maximum of 32 sets. If calibration switching was not selected, then only one set number can be defined.	Min = 1 Max = 32	PD
Engineering Units	character	10	Enter the engineering units in which data is interpreted.		PD
Low Range	float	16	Enter the minimum data value of the parameter converted to engineering units.		PD
High Range	float	16	Enter the maximum data value of the parameter converted to engineering units.		PD
Degree	integer	1	Enter the degree number of the polynomial equation.	Min = 1 Max = 9	PD
Coefficient A0	character	16	Enter the signed mantissa and signed exponent (ex.+400217E-01)		PD
Coefficient A1	character	16	Enter the signed mantissa and signed exponent (ex.+400217E-01)		PD
Coefficient A2	character	16	Enter the signed mantissa and signed exponent (ex.+400217E-01)		PD



**FIGURE A-4 INSTRUCTIONS FOR COMPLETING HOSC/POIC TELEMETRY POLYNOMIAL DEFINITION (TABLE A-4)**  
**(Page 2 of 2)**

<b>Data Field</b>	<b>Field Type</b>	<b>Length</b>	<b>Description</b>	<b>Allowed Range</b>	<b>Definition Responsibility</b>
Coefficient A3	character	16	Enter the signed mantissa and signed exponent (ex.+400217E-01)		PD
Coefficient A4	character	16	Enter the signed mantissa and signed exponent (ex.+400217E-01)		PD
Coefficient A5	character	16	Enter the signed mantissa and signed exponent (ex.+400217E-01)		PD
Coefficient A6	character	16	Enter the signed mantissa and signed exponent (ex.+400217E-01)		PD
Coefficient A7	character	16	Enter the signed mantissa and signed exponent (ex.+400217E-01)		PD
Coefficient A8	character	16	Enter the signed mantissa and signed exponent (ex.+400217E-01)		PD
Coefficient A9	character	16	Enter the signed mantissa and signed exponent (ex.+400217E-01)		PD

TABLE A-4 HOSC/POIC TELEMETRY POLYNOMIAL DEFINITION

Parameter Correlation Number	Parameter/ Technical Name	Primitive PUI	Default Set Number	Set Number	Eng Units	Low Range	High Range	Degree	COEFFICIENT									
									A0	A1	A2	A3	A4	A5	A6	A7	A8	A9

**FIGURE A-5 INSTRUCTIONS FOR COMPLETING HOSC/POIC TELEMETRY STATE CODE DEFINITION (TABLE A-5)**

<b>Data Field</b>	<b>Field Type</b>	<b>Length</b>	<b>Description</b>	<b>Allowed Range</b>	<b>Definition Responsibility</b>
Parameter Correlation Number	character	7	Parameter correlation number that was selected as requiring state code calibration from Table A-2.	Auto Populated from parameters that were selected in Table A-2.	PD
Parameter/ Technical Name	character	89	Parameter/technical name that was selected as requiring state code calibration from Table A-2.	Auto Populated from parameters that were selected in Table A-2.	PD
Primitive PUI	character	13	Primitive PUI that was selected as requiring state code calibration from Table A-2.	Auto Populated from parameters that were selected in Table A-2.	PEI
Default Set Number	integer	2	Enter the set number of the default calibration set. If calibration switching was not selected, then default calibration set number can only be 1.	Min = 1 Max = 32	PD
Set Number	integer	2	Enter the sequential number of the set of coefficients with a maximum of 32 sets. If calibration switching was not selected, then only one set number can be defined.	Min = 1 Max = 32	PD
Sequence Number	integer	2	Enter the sequence number of the state code within a calibration set number.	Min = 1 Max = 99	PD
Low Count	integer	12	Enter the low end of the range of counts for which the state conversion code applies.	Min = -2147483648 Max = 2147483636	PD
High Count	integer	12	Enter the high end of the range of counts for which the state conversion code applies.	Min = -2147483647 Max = 2147483647	PD
State Code	character	12	Enter the state conversion code for a parameter when its counts falls into the range specified by low and high.		PD
Expected State	character	1	Check the box if this parameter will have an expected state data.		PD

TABLE A-5 HOSC/POIC TELEMETRY STATE CODE DEFINITION

Parameter Correlation Number	Parameter/ Technical Name	Primitive PUI	Default Set Number	Set Number	Sequence Number	Low Count	High Count	State Code	Expected State

**FIGURE A-6 INSTRUCTIONS FOR COMPLETING HOSC/POIC TELEMETRY CALIBRATION SWITCHING (TABLE A-6)**

<b>Data Field</b>	<b>Field Type</b>	<b>Length</b>	<b>Description</b>	<b>Allowed Range</b>	<b>Definition Responsibility</b>
Parameter Correlation Number	character	7	Parameter correlation number that was selected as requiring calibration switching from Table A-2.	Auto Populated from parameters that were selected in Table A-2.	PD
Parameter/ Technical Name	character	89	Parameter/technical name that was selected as requiring calibration switching from Table A-2.	Auto Populated from parameters that were selected in Table A-2.	PD
Primitive PUI	character	13	Primitive PUI that was selected as requiring calibration switching from Table A-2.	Auto Populated from parameters that were selected in Table A-2.	PEI
Calibration Switched Primitive PUI	character	13	Enter the primitive PUI of the parameter to be used to perform switching between sets of calibration. If blank, no calibration switching is performed.	The parameter being used for switching must be in the same packet as the parameter for which switching is used.	PD
Calibration Set Number	integer	2	Identify the calibration set number for the measurement that is to be calibrated.	Min = 1 Max = 32	PD
Low Range	float	16	Enter the low end of the range in engineering units for the calibration switch measurement.		PD
High Range	float	16	Enter the high end of the range in engineering units for the calibration switch measurement.		PD
State Code	character	12	Enter the state code of the calibration switch measurement.		PD

TABLE A-6 HOSC/POIC TELEMETRY CALIBRATION SWITCHING

Parameter Correlation Number	Parameter/ Technical Name	Primitive PUI	Calibration Switched Primitive PUI	Calibration Set Number	Low Range	High Range	State Code

**FIGURE A-7 INSTRUCTIONS FOR COMPLETING HOSC/POIC EXPECTED STATE DEFINITION (TABLE A-7)**

<b>Data Field</b>	<b>Field Type</b>	<b>Length</b>	<b>Description</b>	<b>Allowed Range</b>	<b>Definition Responsibility</b>
Parameter Correlation Number	character	7	Parameter Correlation Number that was selected as requiring Expected State Services from Table A-2.	Auto Populated from parameters that were selected in Table A-2.	PD
Parameter/Technical Name	character	89	Parameter/Technical Name that was selected as requiring Expected State Services from Table A-2.	Auto Populated from parameters that were selected in Table A-2.	PD
Primitive PUI	character	13	Primitive PUI that was selected as requiring Expected State Services from Table A-2.	Auto Populated from parameters that were selected in Table A-2.	PEI
Samples Used	character	1	Choose either all samples or only first sample to be used for expected state monitoring.	"All" or "Only First"	PD
Expected State	character	12	Enter the expected state of the measurement being monitored.		PD
Number of Violations	integer	2	Enter the number of consecutive state code violations to be tolerated before user notification.		PD
Exception Monitored Message Description	character	60	Enter the text description of the exception monitor error message.		PD

TABLE A-7 HOSC/POIC EXPECTED STATE DEFINITION

Parameter Correlation Number	Parameter/ Technical Name	Primitive PUI	Samples Used	Expected State	Number of Violations	Exception Monitored Message Description



**FIGURE A-8 INSTRUCTIONS FOR COMPLETING HOSC/POIC LIMIT SENSING DEFINITION (TABLE A-8)**  
**(Page 1 of 2)**

<b>Data Field</b>	<b>Field Type</b>	<b>Length</b>	<b>Description</b>	<b>Allowed Range</b>	<b>Definition Responsibility</b>
Parameter Correlation Number	character	7	Parameter Correlation Number that was selected as requiring Limit Sensing Services from Table A-2.	Auto Populated from parameters that were selected in Table A-2.	PD
Parameter/Technical Name	character	89	Parameter/Technical Name that was selected as requiring Limit Sensing Services from Table A-2.	Auto Populated from parameters that were selected in Table A-2.	PD
Primitive PUI	character	13	Primitive PUI that was selected as requiring Limit Sensing Services from Table A-2.	Auto Populated from parameters that were selected in Table A-2.	PEI
Default Set Number	integer	2	Enter the set number of the default calibration set.	Min = 1 Max = 32	PD
Limit Set Number	integer	2	Enter the sequential number of the set of limits.	Min = 1 Max = 32	PD
Number of Violations	integer	2	Enter the number of consecutive limit violations to be tolerated before user notification.		PD
Samples Used	character	1	Choose either all samples or only first sample to be used for limit sensing.	"All" or "Only First"	PD
Low Caution	float	16	Enter the minimum value in engineering units at which a caution should be displayed. Low end of the caution range in engineering units.	The Low Caution value must be lower than High Caution and High Warning values.	PD
High Caution	float	16	Enter the maximum value in engineering units at which a caution should be displayed.	The High Caution value must be lower than High Warning values	PD
Low Warning	float	16	Enter the minimum value in engineering units at which a warning should be displayed. Low end of the warning range in engineering units.	The Low Warning value must be lower than the Low Caution, High Caution, High Warning values.	PD
High Warning	float	16	Enter the high end of the warning range in engineering units.		PD

**FIGURE A-8 INSTRUCTIONS FOR COMPLETING HOSC/POIC LIMIT SENSING DEFINITION (TABLE A-8)**  
**(Page 2 of 2)**

<b>Data Field</b>	<b>Field Type</b>	<b>Length</b>	<b>Description</b>	<b>Allowed Range</b>	<b>Definition Responsibility</b>
Delta	float	16	Enter the allowable change between two consecutive samples of the measurement.		PD
Exception Monitored Message Description	character	60	Enter the text description of the exception monitor error message.		PD

TABLE A-8 HOSC/POIC LIMIT SENSING DEFINITION

Parameter Correlation Number	Parameter/ Technical Name	Primitive PUI	Default Set Number	Limit Set Number	Number of Violations	Samples Used	Low Caution	High Caution	Low Warning	High Warning	Delta	Exception Monitored Message Descrip- tion

**FIGURE A-9 INSTRUCTIONS FOR COMPLETING HOSC/POIC LIMIT SWITCH DEFINITION (TABLE A-9)**

<b>Data Field</b>	<b>Field Type</b>	<b>Length</b>	<b>Description</b>	<b>Allowed Range</b>	<b>Definition Responsibility</b>
Parameter Correlation Number	character	7	Parameter correlation number that was selected as requiring limit switching from Table A-2.	Auto Populated from parameters that were selected in Table A-2.	PD
Parameter/ Technical Name	character	89	Parameter/technical name that was selected as requiring limit switching from Table A-2.	Auto Populated from parameters that were selected in Table A-2.	PD
Primitive PUI	character	13	Primitive PUI that was selected as requiring limit switching from Table A-2.	Auto Populated from parameters that were selected in Table A-2.	PEI
Limit Switched Primitive PUI	character	13	Enter the primitive PUI of the parameter to be used to perform switching between sets of limits. If blank, no limit switching is performed.		PD
Limit Set Number	integer	2	Identify the limit set number for the measurement that is to be limit sensed.	Min = 1 Max = 32	PD
Low Range	float	16	Enter the low end of the range in engineering units for the limit switch measurement. If low range is used, then the high range must have a value and the state code field is null.		PD
High Range	float	16	Enter the high end of the range in engineering units for the limit switch measurement. If the high range is used, then the low range must have a value and the state code field must be null.		PD
State Code	character	12	Enter the state code of the limit switch measurement. If the state code field has a value, then the low and high range must be null.		PD

TABLE A-9 HOSC/POIC LIMIT SWITCH DEFINITION

Parameter Correlation Number	Parameter/ Technical Name	Primitive PUI	Limit Switched Primitive PUI	Limit Set Number	Low Range	High Range	State Code

**FIGURE A-10 INSTRUCTIONS FOR COMPLETING LRDL PACKET DEFINITION (TABLE A-10)**  
**(Page 1 of 2)**

<b>Data Field</b>	<b>Field Type</b>	<b>Length</b>	<b>Description</b>	<b>Allowed Range</b>	<b>Definition Responsibility</b>
Packet Correlation Number	number	4	Enter the packet identifier. The packet correlation number is a unique payload-defined number that is used to relate packet definitions from one table to another. This number provides the means to provide information about packet "n"; the same packet correlation number shall be automatically entered on any tables related to packet "n". If this field is used, then the Low Rate Telemetry (LRT) field in the Software Interface Summary Table will contain and "X".		PD
Packet Name/ Telemetry ID	character	20	Enter a descriptive name for the data packet.	Safe Mode, Standby, Shutdown, or Initialization	PD
APID	integer	4	Enter the Application Process Identifier number assigned by ISS (obtained from Mission Build Facility/MBF APID table on ftp site).	0 – 2047	PEI
Time ID	number	2	Always a binary '01' for data packets.	'01'	
Packet Type	number	4	Enter a binary number corresponding to data packet type. Packet type currently can only be '0'.	Default = '0'	PD
Version ID	number	5	Used to identify multiple versions of a format (word 7, secondary header).	1–65535 Default = 1	PD
Packet Length	number	4	Enter the total number of words including CCSDS Header contained in the data packet. (Length for LRDL telemetry can be up to 640 words, including 8 words for the CCSDS header)	Up to 640 words including CCSDS header	PD

**FIGURE A-10 INSTRUCTIONS FOR COMPLETING LRD L PACKET DEFINITION (TABLE A-10)**  
**(Page 2 of 2)**

<b>Data Field</b>	<b>Field Type</b>	<b>Length</b>	<b>Description</b>	<b>Allowed Range</b>	<b>Definition Responsibility</b>
Packet Rate/ Update Cycle	number	3	Enter the data rate of each of the data packets. The value entered is expressed in the units selected below.		PD
Units	character	11	Select either packets/sec or Kbps	packets/sec or kbps	PD
Update Rate	number	3	Enter the update rate of each of the data packets	0.1 Hz or 1.0 Hz	PD
POIC Processed Packet?	character	1	Check this box if the packet is to be POIC processed. If this box is checked then the Low Rate Telemetry – Ground Processing (POIC) in the Software Interface Summary Table will contain an "X".		PD

TABLE A-10 LRDL PACKET DEFINITION

Packet Correlation Number	Packet Name/ Telemetry ID	APID	Time ID	Packet Type	Version ID	Packet Length	Packet Rate/ Update Cycle	Units	Update Rate (Hz)	POIC Processed Packet



**FIGURE A-11 INSTRUCTIONS FOR COMPLETING MRDL PACKET DEFINITION (TABLE A-11)**  
**(Page 1 of 2)**

Data Field	Field Type	Length	Description	Allowed Range	Definition Responsibility
Packet Correlation Number	number	4	Enter the packet identifier. The packet correlation number is a unique payload-defined number that is used to relate packet definitions from one table to another. This number provides the means to provide information about packet "n"; the same packet correlation number shall be automatically entered on any tables related to packet "n". If this field is used, then the Medium Rate Telemetry (MRT) field in the Software Interface Summary Table will contain and "X".		PD
Packet Name/ Telemetry ID	character	20	Enter a descriptive name for the data packet.	Safe Mode, Standby, Shutdown, Initialization	PD
APID	integer	4	Enter the Application Process Identifier number assigned by ISS (obtained from Mission Build Facility/MBF APID table on ftp site).	0-2047	PEI
Time ID	number	2	Always a binary '01' for data packets.	'01'	PD
Packet Type	number	4	Enter a binary number corresponding to data packet type. Packet type currently can only be '0'.	Default = '0'	PD
Version ID	number	5	Used to identify multiple versions of a format (word 7, secondary header).	1-65535 Default = 1	PEI
Packet Length	number	4	Enter the total number of words including CCSDS Header contained in the data packet.	Min - 100 bytes Max - 1500 bytes	PD
Packet Rate/Update Cycle	number	7	Enter the data rate of each of the data packets. Specify the data rate in units of packets per second or kbps as selected below.		PD
Units	character	11	Select either packets/sec or kbps	packets/sec or kbps	PD

**FIGURE A-11 INSTRUCTIONS FOR COMPLETING MRDL PACKET DEFINITION (TABLE A-11)**  
**(Page 2 of 2)**

<b>Data Field</b>	<b>Field Type</b>	<b>Length</b>	<b>Description</b>	<b>Allowed Range</b>	<b>Definition Responsibility</b>
Separation	number	5	Enter the amount of time in minutes separating the telemetry downlink sessions.		PD
POIC Processed Packet?	character	1	Check this box if the packet is to be POIC processed. If this box is checked then the Medium Rate Telemetry – Ground Processing (POIC) in the Software Interface Summary Table will contain an "X".		PD

TABLE A-11 MRDL PACKET DEFINITION

Packet Correlation Number	Packet Name/Telemetry ID	APID	Time ID	Packet Type	Version ID	Packet Length (words)	Packet Rate/Update Cycle	Units packets/sec or kbps	Separation	POIC Processed Packet?

**FIGURE A-12 INSTRUCTIONS FOR COMPLETING HRDL PACKET DEFINITION (TABLE A-12)**  
**(Page 1 of 2)**

Data Field	Field Type	Length	Description	Allowed Range	Definition Responsibility
Packet Correlation Number	number	4	Enter the packet identifier. The packet correlation number is a unique payload-defined number that is used to relate packet definitions from one table to another. This number provides the means to provide information about packet "n"; the same packet correlation number shall be automatically entered on any tables related to packet "n". If this field is used, then the High Rate Telemetry (HRT) field in the Software Interface Summary Table will contain and "X".		PD
Packet Name/ Telemetry ID	character	20	Enter a descriptive name for the data packet.	Safe Mode, Standby, Shutdown, or Initialization	PD
APID	integer	4	Enter the Application Process Identifier number assigned by ISS (obtained from Mission Build Facility/MBF APID table on ftp site).	0-2047	PEI
Time ID	number	2	Always a binary '01' for data packets.	'01'	PD
Packet Type	number	4	Enter a binary number corresponding to data packet type. Packet type currently can only be '0'.	Default = '0'	PD
Version ID	number	5	Used to identify multiple versions of a format (word 7, secondary header).	1-65535 Default = 1	PEI
Packet Length	number	4	Enter the total number of words including CCSDS Header contained in the data packet.	Min - 100 bytes (50 words) Max - 4096 bytes (2048 words) including CCSDS header	PD
Packet Rate/ Update Cycle	number	7	Enter the data rate of each of the data packets. Specify the data rate in units of packets per second or kbps as selected below.		PD

**FIGURE A-12 INSTRUCTIONS FOR COMPLETING HRDL PACKET DEFINITION (TABLE A-12)**  
**(Page 2 of 2)**

<b>Data Field</b>	<b>Field Type</b>	<b>Length</b>	<b>Description</b>	<b>Allowed Range</b>	<b>Definition Responsibility</b>
Units	character	11	Select either packets/sec or kbps	packets/sec or kbps	PD
Separation	number	5	Enter the amount of time in minutes separating the telemetry downlink sessions.		PD
POIC Processed Packet?	character	1	Check this box if the packet is to be POIC processed. If this box is checked then the High Rate Telemetry field in the Software Interface Summary Table will contain an "X".		PD

### TABLE A-12 HRDL PACKET DEFINITION

[illegible]

**FIGURE A-13 INSTRUCTION FOR COMPLETING PACKET DEFINITION (TABLE A-13)**

<b>Data Field</b>	<b>Field Type</b>	<b>Length</b>	<b>Description</b>	<b>Allowed Range</b>	<b>Definition Responsibility</b>
Packet Correlation Number	number	4	Enter the packet identifier. The packet correlation number is a unique payload-defined number that is used to relate packet definitions from one table to another. This number provides the means to provide information about packet "n"; the same packet correlation number shall be automatically entered on any tables related to packet "n".		PD
Packet Name/Telemetry ID	character	20	Enter a descriptive name for the data packet.		PD
ISS Issued APID	integer	4	APID that was entered in Table A-10, A-11 and A-12.	Auto populated from Table A-10, A-11 and A-12	PEI
Packet Time Tag Primitive PUI	character	13	Enter the signal ID of any embedded time tag within the packet.		PD
Format Code Primitive PUI	character	13	Enter format code which will be used as a unique identification number to determine the location of the packet format within the packet for multiple format packets.		PD
Packet Format Code	hex number	4	Enter the hex representation of the downlinked format ID of the packet for multiple format packets.		PD
Packet Length (Words)	integer	5	Enter the length of the packet in words (no longer than 4096).	less than 4096	PD
Packet Rate/Update Cycle	float	8	Enter the estimated number of packets per second that the payload sends. Same as entry in Table A-10, A-11 and A-12.		PD
Packet Data Cycle/Rate	integer	3	Enter the number of packets required to include at least one sample of every measurement in a packet format.		PD
Packet Subset Present?	character	1	Check this box if subsets are contained with this packet.		PD

TABLE A-13 PACKET DEFINITION

Packet Number	Packet Name/ Telemetry ID	ISS Issued APID	Packet Time Tag Primitive PUI	Format Code Primitive PUI	Packet Format Code	Packet Length (words)	Packet Rate/ Update Cycle	Packet Data Cycle	Packet Subset Present?



**FIGURE A-14 INSTRUCTIONS FOR COMPLETING SUBSET FORMAT DEFINITION (TABLE A-14)**  
**(Page 1 of 2)**

<b>Data Field</b>	<b>Field Type</b>	<b>Length</b>	<b>Description</b>	<b>Allowed Range</b>	<b>Definition Responsibility</b>
Packet Correlation Number	number	4	Packet Correlation Numbers that were selected as having subsets present from Table A-13.	Auto populated from Packet Correlation Numbers that were selected as having subsets present from Table A-13.	PD
Packet Name/Telemetry ID	character	20	Packet name that was selected as having subsets present from Table A-13.	Auto populated from Packet Name that was selected as having subsets present from Table A-13.	PD
Encapsulated Stream ID (APID)	integer	4	Enter the APID of the data stream in which this subset is contained.	Enter the APIDs that have been assigned by PEI to this payload.	PD
Encapsulated Packet Format Code	hex number	4	Enter the hex representation of the downlinked format ID of the packet for multiple format packets.		PD
Payload Defined Subset ID	integer	5	Enter the subset identifier of the Subset in the packet. User may define this subset ID for all packet subsets other than the Health and Status subset. When defining the Health and Status subset, enter the ISS issued subset ID.		PD
Subset ID Primitive PUI	integer	4	Enter the assigned primitive PUI for this parameter.		PEI
Subset Multiple Formats	character	1	Check the box if the subset contains multiple formats.		PD
Subset Format	hex number	4	Enter the hex representation of downlinked subset format ID pattern for use with multiple formats.	Default = ? If no multiformats	PD
Subset Format Code Primitive PUI	character	13	Enter the signal identifier used to determine the location of the subset format within a subset for use with multiple formats.		PD

**FIGURE A-14 INSTRUCTIONS FOR COMPLETING SUBSET FORMAT DEFINITION (TABLE A-14)**  
**(Page 2 of 2)**

<b>Data Field</b>	<b>Field Type</b>	<b>Length</b>	<b>Description</b>	<b>Allowed Range</b>	<b>Definition Responsibility</b>
Subset Sample Composition	character	1	Enter the type of subset sample Composition. See MSFC-STD-1274.	N = Normal S= Super C = Counter R = Range D = Random	PD
Subset Rate	integer	3	Enter the estimated rate of subsets in the data stream.		PD
Subset Data Cycle	integer	3	Enter the number of subsets required to include at least one sample of every measurement in a format.		PD
Subset Start Word	integer	6	Enter the start position for the data relative to the first word of the packet, and starting with zero.		PD
Subset Word Offset	integer	6	Enter the offset (in words) to the next occurrence of this sample.		PD
Subset Length	integer	6	Enter the length of this subset in words for this subset format. Start with the subset ID as the 1st word.	For Health and Status include the subset ID in total length in words	PD

[illegible]

**FIGURE A-15 INSTRUCTIONS FOR COMPLETING SUBSET RANGE SAMPLING DEFINITION (TABLE A-15)**

<b>Data Field</b>	<b>Field Type</b>	<b>Length</b>	<b>Description</b>	<b>Allowed Range</b>	<b>Definition Responsibility</b>
Packet Correlation Number	number	4	Packet correlation numbers that were selected as having subsets present from Table A-14.	Auto populated from packet correlation numbers that were selected as having subset Range Sampling from Table A-14.	PD
Packet Name/Telemetry ID	character	20	Packet name that was selected as having subsets present from Table A-14.	Auto populated from Packet Name that was selected as having subset Range Sampling from Table A-14.	PD
Payload Defined Subset ID	integer	5	Payload Defined Subset ID that was selected as having subset range sampling data from Table A-14.	Auto populated from Payload Defined Subset ID that was selected as having subset Range Sampling from Table A-14.	PD
Range Signal ID	character	13	Enter the signal ID of the range limits to be used to perform user specified range dependent decomposition.		PD
Range Low	float	16	Enter the low end of the range of the measurement identified by the signal ID.		PD
Range High	float	16	Enter the high end of the range of the measurement identified by the signal ID.		PD
Range State Code	character	12	Enter the state code of the range of the measurement defined by the signal ID.		PD

TABLE A-15 SUBSET RANGE SAMPLING DEFINITION

Packet Correlation Number	Packet Name/ Telemetry ID	Payload Defined Subset ID	Range Signal ID	Range Low	Range High	Range State Code

**FIGURE A-16 INSTRUCTIONS FOR COMPLETING SUBSET COUNTER SAMPLING DEFINITION (TABLE A-16)**

<b>Data Field</b>	<b>Field Type</b>	<b>Length</b>	<b>Description</b>	<b>Allowed Range</b>	<b>Definition Responsibility</b>
Packet Correlation Number	number	4	Packet Correlation Numbers that were selected as having subsets present from Table A-14.	Auto populated from Packet Correlation Numbers that were selected as having subset Range Counter from Table A-14.	PD
Packet Name/Telemetry ID	character	20	Packet name that was selected as having subsets present from Table A-14.	Auto populated from Packet Name that was selected as having subset Range Counter from Table A-14.	PD
Payload Defined Subset ID	integer	5	Payload Defined Subset ID that was selected as having subset counter sampling data from Table A-14.	Auto populated from Payload Defined Subset ID that was selected as having subset Counter Sampling from Table A-14.	PD
Counter Signal ID	character	13	Enter the signal ID of the counter to be used to perform user specified counter dependent decomposition.		PD
Counter Start Value	integer	4	Enter the value of the counter for first occurrence of the subset.		PD
Counter Offset	integer	5	Indicate the delta value of the counter for this subset.		PD

TABLE A-16 SUBSET COUNTER SAMPLING DEFINITION

Packet Correlation Number	Packet/ Telemetry ID	Payload Defined Subset ID	Counter Signal ID	Counter Start Value	Counter Offset

**FIGURE A-17 INSTRUCTIONS FOR COMPLETING TELEMETRY PACKET DEFINITION (TABLE A-17)**  
**(Page 1 of 2)**

<b>Data Field</b>	<b>Field Type</b>	<b>Length</b>	<b>Description</b>	<b>Allowed Range</b>	<b>Definition Responsibility</b>
Packet Correlation Number	number	4	Select a Packet Correlation Numbers that was entered in Table A-13 for making data entries for this packet. Default selection thereafter until selection is changed.	Auto populated from Packet Correlation Numbers that were entered in Table A-13.	PD
Packet Name/ Telemetry ID	character	20	Packet name that was entered in Table A-13. Default to current packet until user changes packets.	Auto populated from Packet Name that was entered in Table A-13.	PD
Parameter Correlation Number	character	7	Select from a list of Parameter Correlation Numbers that was entered in Table A-1.		PD
Parameter/ Technical Name	character	30	Will be auto populated when the parameter Correlation Number is selected.		PD
Subset ID	integer	5	Enter the subset ID that this parameter is being downlinked in. If defining Health and Status, then use time ISS subset ID.		PD
Subset Format	number	4	Enter the hex representation of downlinked subset format ID for use with multiple formats.	If the subset being defined is the Health and Status subset then place the hex representation of the subset ID in the subset format. If no subset required, default = ?.	PD
Parameter Composition	character	2	Enter the parameter composition of the measurement.	T = Bit contiguous typical (Default) MS = Bit non-contiguous multisyllable BG = Bit contiguous group parameter NG = Bit non-contiguous group parameter	PD



**FIGURE A-17 INSTRUCTIONS FOR COMPLETING TELEMETRY PACKET DEFINITION (TABLE A-17)**  
**(Page 2 of 2)**

<b>Data Field</b>	<b>Field Type</b>	<b>Length</b>	<b>Description</b>	<b>Allowed Range</b>	<b>Definition Responsibility</b>
Sample Composition	character	1	Enter the sampling composition that describes how samples of a parameter are arranged in the stream. Default value = N	N = Normal occurrence or once per major frame, packet, or subset S = Super occurrence or more than once per major frame, packet, or subset. C = Counter dependent sampling. R = Range dependent sampling.	PD
Rate	integer	3	Enter the rate of parameter samples per data stream for group sampling only.		PD
Sampling Offset	integer	5	Enter the offset (in words) from the first occurrence of the parameter to the next for group sampling only.		PD
Start Word	integer	5	Enter the start position for the data relative to the first byte of the packet, starting with one and with subsequent word numbers in sequential order.	First Word Number = 1	PD
Bit Offset	number	2	Enter the start bit number within each data word for this parameter. The first bit number is zero.	Min = 0 Max = 15	PD
Data Length	integer	5	Enter the length of the measurement in bits.		PD



**FIGURE A-18 INSTRUCTIONS FOR COMPLETING TELEMETRY PACKET RANGE SAMPLE DEFINITION (TABLE A-18)**

<b>Data Field</b>	<b>Field Type</b>	<b>Length</b>	<b>Description</b>	<b>Allowed Range</b>	<b>Definition Responsibility</b>
Packet Correlation Number	number	4	Packet Correlation Numbers that were selected as having range sampling from Table A-17.	Auto populated from Packet Correlation Numbers that were selected as having range sampling from Table A-17.	PD
Packet Name/ Telemetry ID	character	20	Packet name that was selected as having range sampling from Table A-17.	Auto populated from Packet Name that was selected as having range sampling from Table A-17.	PD
Parameter Correlation Number	character	7	Parameter Correlation Numbers that were selected as having range sampling from Table A-17.	Auto populated from Parameter Correlation that was selected as having range sampling from Table A-17.	PD
Parameter/ Technical Name	character	30	Parameter/Technical Name that was selected as having range sampling from Table A-17.	Auto populated from Parameter/Technical that was selected as having range sampling from Table A-17.	PD
Range Low	float	16	Enter the low end of the range in engineering units of the range measurement for a range dependent parameter.		PD
Range High	float	16	Enter the high end of the range in engineering units of the range measurement for a range dependent parameter.		PD
Range State Code	character	12	Enter the state code of the range measurement for a range dependent parameter.		PD
Range Signal ID	character	13	Enter the PUI of the range limits to be used to perform user specified range dependent decomposition.		PD

TABLE A-18 TELEMETRY PACKET RANGE SAMPLE DEFINITION

Packet Correlation Number	Packet Name/ Telemetry ID	Parameter Correlation Number	Parameter/ Technical Name	Range Low	Range High	Range State Code	Range Signal ID

**FIGURE A-19 INSTRUCTIONS FOR COMPLETING TELEMETRY PACKET COUNTER SAMPLE DEFINITION (TABLE A-19)**  
**(Page 1 of 2)**

Data Field	Field Type	Length	Description	Allowed Range	Definition Responsibility
Packet Correlation Number	number	4	Packet Correlation Numbers that were selected as having counter sampling from Table A-17.	Auto populated from Packet Correlation Numbers that were selected as having counter sampling from Table A-17.	PD
Packet Name/Telemetry ID	character	20	Packet name that was selected as having counter sampling from Table A-17.	Auto populated from Packet Name that was selected as having counter sampling from Table A-17.	PD
Parameter Correlation Number	character	7	Parameter Correlation Numbers that were selected as having counter sampling from Table A-17.	Auto populated from Parameter Correlation that was selected as having counter sampling from Table A-17.	PD
Parameter/Technical Name	character	30	Parameter/Technical Name that was selected as having counter sampling from Table A-17.	Auto populated from Parameter/Technical that was selected as having counter sampling from Table A-17.	PD
Counter Start Value	integer	4	Enter the start value of the counter for this measurement.	Min = 0	PD
Counter Offset	integer	4	Enter the delta value of the counter used for this measurement.	Min = 2	PD
Counter Signal ID	character	13	Enter the PUI of the counter to be used to perform user specified counter dependent decomposition.		PD
Initial Value	integer	4	Enter the initial value of the counter when it starts counting.		PD
End Value	integer	4	Enter the ending value of the counter.		PD
Wrap Around	character	1	Select wrap or not a wrap for this parameter.	Wrap or Not a Wrap.	PD
Direction	character	1	Enter "+" if the counter increments or "-" if the counter decrements.	"+" or "-"	PD

**FIGURE A-19 INSTRUCTIONS FOR COMPLETING TELEMETRY PACKET COUNTER SAMPLE DEFINITION (TABLE A-19)**  
**(Page 2 of 2)**

Data Field	Field Type	Length	Description	Allowed Range	Definition Responsibility
Delta	integer	2	Enter the counter delta between successive occurrences of a counter in a stream.		PD
Counter Type	character	3	Enter the type of counter.	B = Block counter P = Packet counter S = Subset counter MIN = Minor frame counter MAJ =Major frame counter N = General counter to be used for counter dependent sampling composition.	PD

### TABLE A-19 TELEMETRY PACKET COUNTER SAMPLE DEFINITION

[illegible]

**FIGURE A-20 INSTRUCTIONS FOR COMPLETING HEALTH AND STATUS INITIALIZATION (TABLE A-20)**

<b>Data Field</b>	<b>Field Type</b>	<b>Length</b>	<b>Description</b>	<b>Allowed Range</b>	<b>Definition Responsibility</b>
Health & Status Transmit Rate	character	4	Select the transmit rate for this subset ID/payload.	0.1 Hz or 1.0 Hz	PD
Health & Status Packet Length	integer	6	Enter the total length (in words) of the Health & Status packet for this subset ID/payload. Start with the subset ID as the first word.	The length entered here should be the same length entered in screen A-14.	PD
Health & Status Group PUI	character	13	Enter the PUI to assist in the identification of a payload's Health & Status data by the payload MDM.		PEI
Payload MDM Services	character	1	Fill in the "yes" section if the payload requires payload MDM services. Fill in the "no" section if the payload does not require the payload MDM services.	(Yes or No) If yes, then the PD is required and allowed to fill in data in Tables A-20 through A-25. If no, then PD is not required and not allowed to enter data in Tables A-20 through A-25.	PD



**TABLE A-20 HEALTH STATUS INITIALIZATION**

Health and Status Transmit Rate		
Health and Status Packet Length (in words)		
Health and Status Group PUI		
	Yes	No
Does this Payload require any service of the Payload MDM? (i.e. Limit Check Service, Exception Monitor, Timeliner Viewed, PCS Displayed)		

**FIGURE A-21 INSTRUCTIONS FOR COMPLETING HEALTH AND STATUS SERVICE REQUIREMENTS (TABLE A-21)**  
**(PAGE 1 OF 2)**

<b>Data Field</b>	<b>Field Type</b>	<b>Length</b>	<b>Description</b>	<b>Allowed Range</b>	<b>Definition Responsibility</b>
Parameter Correlation Number	character	7	Parameter Correlation Number that was selected as Health and Status from Table A-1.	Auto populated Parameter Correlation Number that was selected as Health and Status from Table A-1.	PD
Parameter/ Technical Name	character	30	Parameter/Technical Name that was selected as Health and Status from Table A-1.	Auto populated Parameter/ Technical Name that was selected as Health and Status from Table A-1.	PD
Payload MDM Limit Check Service?	character	1	Check this box if this parameter requires payload MDM limit check service; otherwise leave blank. This field is a flag to indicate the payload MDM limit check. If this box is checked, then the Limit Exception field in the Software Interface Summary Table will contain an "X".		PD
Timeliner Viewed Parameter	character	1	Check this box if this telemetry parameter will be referenced inside a timeline automated procedure file, otherwise leave blank. This is used by the timeliner compiler to prevent the procedure developer from referencing the wrong telemetry valves in their automated procedure files.		PD
PCS Displayed?	character	1	Check this box if this parameter will be displayed on PCS: otherwise, leave blank. If this box is checked, then the PCS Displayed field in the Software Interface Summary Table will contain an "X".		PD
PCS Limit Check Service	character	1	Check this box if this parameter will require PCS limit check.		PD

**FIGURE A-21 INSTRUCTIONS FOR COMPLETING HEALTH AND STATUS SERVICE REQUIREMENTS (TABLE A-21)  
(PAGE 2 OF 2)**

<b>Data Field</b>	<b>Field Type</b>	<b>Length</b>	<b>Description</b>	<b>Allowed Range</b>	<b>Definition Responsibility</b>
<u>PCS Calibration</u>					
Polynomial Calibration	character	1	Check this box if this parameter will require polynomial calibration for PCS Calibration.		PD
Linear Calibration	character	1	Check this box if this parameter will require linear calibration for PCS Calibration.		PD
Ancillary Data?	character	1	Check this box if this parameter can be used as an ancillary data parameter that can be used by other payloads. If this box is checked, then the Unique Ancillary Data field of the Software Interface Summary Table will contain an "X".		PD

TABLE A-21 HEALTH AND STATUS REQUIREMENTS

Parameter Correlation  Number	Parameter/ Technical  Name	Payload MDM Limit  Check Service?	Timeliner Viewed Parameter	PCS Displayed?	PCS Limit Check  Service?	PCS Calibration		Ancillary Data
						Polynomial Calibration	Linear Calibration	

**FIGURE A-22 INSTRUCTIONS FOR COMPLETING HEALTH AND STATUS WORD DEFINITIONS (TABLE A-22)**  
**(Page 1 of 2)**

<b>Data Field</b>	<b>Field Type</b>	<b>Length</b>	<b>Description</b>	<b>Allowed Range</b>	<b>Definition Responsibility</b>
Parameter Correlation Number	character	7	Parameter Correlation Number that were selected as requiring payload MDM processing from Table A-20.	Auto populated Parameter Correlation Number that was selected as requiring payload MDM processing from Table A-20.	PD
Parameter/ Technical Name	character	30	Parameter/Technical Name that was selected as requiring payload MDM processing from Table A-20.	Auto populated Parameter/ Technical Name that was selected as requiring MDM processing from Table A-20.	PD
Word PUI	character	13	Enter the PUI for each word. This PUI is used to process this parameter onboard and on the ground.		PEI
Primitive PUI	character	13	Enter the PUI for each primitive. This PUI is used to process this parameter onboard and on the ground.		PEI
Word Number	number	4	Enter the start word number within each data packet for this parameter. Words are 16 bits in length. The first word (payload subset ID) number is one with subsequent word numbers in sequential order. Do not repeat for additional parameters contained in the same word. Packets can be up to 1280 words in length for each RT address. (This 1280 limit includes the CCSDS header and subset ID words.)	1 to 1272 words First Word Number = 1	PD
Bit Offset	number	2	Enter the start bit number within each data word for this parameter. The most significant bit number is zero.		PD

**FIGURE A-22 INSTRUCTIONS FOR COMPLETING HEALTH AND STATUS WORD DEFINITIONS (TABLE A-22)**  
**(Page 2 of 2)**

<b>Data Field</b>	<b>Field Type</b>	<b>Length</b>	<b>Description</b>	<b>Allowed Range</b>	<b>Definition Responsibility</b>
Data Length	number	2	Enter the number of bits which define this parameter's length.		PD
Data Type	character	2	Enter the data type of this parameter.	I = integer LI = long integer FP = floating point DF = double precision floating point B = boolean	PD

TABLE A-22 HEALTH AND STATUS WORD DEFINITIONS

Parameter Correlation Number	Parameter/ Technical Name	Word PUI	Primitive PUI	Word Number	Bit Offset	Data Length	Data Type

**FIGURE A-23 INSTRUCTIONS FOR COMPLETING HEALTH AND STATUS  
PAYLOAD MDM LIMIT CHECK DEFINITION (TABLE A-23)  
(Page 1 of 2)**

<b>Data Field</b>	<b>Field Type</b>	<b>Length</b>	<b>Description</b>	<b>Allowed Range</b>	<b>Definition Responsibility</b>
Parameter Correlation Number	character	7	a. Parameter Correlation Numbers that were selected as requiring payload MDM processing from Table A-21.  b. Enter additional copies of applicable PCNs for multiple value and trip count settings as required.	Auto populated Parameter Correlation Number that was selected as requiring payload MDM processing from Table A-21.	PD
Parameter/ Technical Name	character	30	a. Parameter/Technical Name that was selected as requiring payload MDM processing from Table A-21.  b. Enter additional copies of applicable name for multiple value and trip count settings as required.	Auto populated Parameter/ Technical Name that was selected as requiring MDM processing from Table A-21. Multiple Names can also be manually entered.	PD
Data Type	character	2	The data type that was selected for this parameter on Table A-22.	Auto populated data type that was entered for this parameter on Table A-22.	PD
Method (error)	character	1	Enter the type of error checking to be performed by the MDM.	E = equal-to N = not equal-to U = upper limit check L = lower limit check	PD
Annunciation (Error Type)	character	1	Enter the type of error message.	C = caution W = warning N = none	PD
Value	number	14	Enter the value to check the PUI against. Actual value is dependent on the data type.		PD



**FIGURE A-23 INSTRUCTIONS FOR COMPLETING HEALTH AND STATUS  
PAYLOAD MDM LIMIT CHECK DEFINITION (TABLE A-23)  
(Page 2 of 2)**

<b>Data Field</b>	<b>Field Type</b>	<b>Length</b>	<b>Description</b>	<b>Allowed Range</b>	<b>Definition Responsibility</b>
Trip Count	number	2	Number of sequential times a PUI can go out of limits prior to the payload MDM providing an out of limits response auto populate pulldown list with command selected as PLMDM initiated.	0 – 60	PD
Command CN (for the command to be sent)	character	7	Enter the Command Correlation Number to be sent as a result of the payload MDM limit check service.		PD

TABLE A-23 HEALTH AND STATUS PAYLOAD MDM LIMIT CHECK DEFINITION

Packet Correlation Number	Parameter/ Technical Name	Data Type	Method (Error)	Annunciation (Error Type)	Value	Trip Count	Command CN (for the Cmd to be sent)

**FIGURE A-24 INSTRUCTIONS FOR COMPLETING HEALTH AND STATUS  
PCS POLYNOMIAL CALIBRATION DEFINITION (TABLE A-24)  
(Page 1 of 2)**

<b>Data Field</b>	<b>Field Type</b>	<b>Length</b>	<b>Description</b>	<b>Allowed Range</b>	<b>Definition Responsibility</b>
Parameter Correlation Number	character	7	Parameter Correlation Number that was selected as requiring PCS Polynomial Calibration from Table A-21.	Auto Populated Parameter Correlation Number that was selected as requiring PCS Polynomial Calibration from Table A-21.	PD
Parameter/Technical Name	character	30	Parameter/Technical Name that was selected as requiring PCS Polynomial Calibration from Table A-21.	Auto Populated Parameter/Technical Name that was selected as requiring PCS Polynomial Calibration from Table A-21.	PD
Engineering Units	character	30	Enter the engineering units defining this parameter.		PD
Min. Value (Eng. Units)	number	14	Enter the minimum value supported by this calibration set.	Valid values are defined by SSPS ST00560.	PD
Max Value (Eng. Units)	number	14	Enter the maximum value supported by this calibration set.	Valid values are defined by SSPS ST00560.	PD
Degree	integer	1	Enter the Number/Degree of coefficients to be used.	Valid values are defined by SSPS ST00560. 0-4	PD
Coefficient 0	number	14	Enter the zero-level coefficient of the polynomial or step; including the sign. Enter data in new row for each piecewise segment.		PD

**FIGURE A-24 INSTRUCTIONS FOR COMPLETING HEALTH AND STATUS  
PCS POLYNOMIAL CALIBRATION DEFINITION (TABLE A-24)  
(Page 2 of 2)**

<b>Data Field</b>	<b>Field Type</b>	<b>Length</b>	<b>Description</b>	<b>Allowed Range</b>	<b>Definition Responsibility</b>
Coefficient 1	number	14	Enter the first-level coefficient of the polynomial or step; including the sign. Enter data in new row for each piecewise segment.		PD
Coefficient 2	number	14	Enter the second-level coefficient of the polynomial or step; including the sign. Enter data in new row for each piecewise segment.		PD
Coefficient 3	number	14	Enter the third-level coefficient of the polynomial or step; including the sign. Enter data in new row for each piecewise segment.		PD
Coefficient 4	number	14	Enter the fourth-level coefficient of the polynomial or step; including the sign. Enter data in new row for each piecewise segment.		PD

TABLE A-24 HEALTH AND STATUS PCS POLYNOMIAL CALIBRATION DEFINITION

Parameter Correlation Number	Parameter/ Technical Name	Engineering Units	Min. Value (Eng. Units)	Max Value (Eng. Units)	Degree	Coefficient A0	Coefficient A1	Coefficient A2	Coefficient A3	Coefficient A4

**FIGURE A-25 INSTRUCTIONS FOR COMPLETING HEALTH AND STATUS  
PCS LINEAR CALIBRATION DEFINITION (TABLE A-25)**

<b>Data Field</b>	<b>Field Type</b>	<b>Length</b>	<b>Description</b>	<b>Allowed Range</b>	<b>Definition Responsibility</b>
Parameter Correlation Number	character	7	Parameter Correlation Number that was selected as requiring PCS Linear Calibration from Table A-21.	Auto Populated Parameter Correlation Number that was selected as requiring PCS Linear Calibration from Table A-21.	PD
Parameter/ Technical Name	character	30	Parameter/Technical Name that was selected as requiring PCS Linear Calibration from Table A-21.	Auto populated Parameter/ Technical Name that was selected as requiring PCS Linear Calibration from Table A-21.	PD
Primitive PUI	character	13	Enter the PUI for each primitive. The PUI is used to process this parameter onboard and on the ground.		PEI
Engineering Units	character	30	Enter the engineering units defining this parameter.		PD
Min. Value (Eng. Units)	number	14	Enter the maximum value supported by this calibration set.		PD
Max. Value (Eng. Units)	number	14	Enter the maximum value supported by this calibration set.		PD
Number of Segments (Max of 30)	number	2	Enter the number of segments for this calibration set.	1 – 30	PD
Segment Number	number	2	Enter the segment number for this calibration set.		PD
Segment A0	number	5	Enter the coefficient of the zeroth segment.	0–32768	PD
Segment A1	number	5	Enter the coefficient of the first segment.	0–32768	PD
Segment Low	number	12	Raw value of the left end at the segment.		
Segment High	number	12	Raw value of the right end at the segment.		

TABLE A-25 HEALTH AND STATUS PCS LINEAR CALIBRATION DEFINITION

Parameter Correlation Number	Parameter/ Technical Name	Primitive PUI	Engineering Units	Min. Value (Eng. Units)	Max. Value (Eng. Units)	Number of Segments (Max of 30)	Segment Number	Segment A0	Segment A1	Segment Low	Segment High

**FIGURE A-26 INSTRUCTIONS FOR COMPLETING HEALTH AND STATUS PCS LIMIT  
CHECK SERVICE DEFINITION (TABLE A-26)**

<b>Data Field</b>	<b>Field Type</b>	<b>Length</b>	<b>Description</b>	<b>Allowed Range</b>	<b>Definition Responsibility</b>
Parameter Correlation Number	character	7	Parameter Correlation Number that was selected as requiring PCS limit check from Table A-21.	Auto Populated Parameter Correlation Number that was selected as requiring PCS limit check from Table A-21.	PD
Parameter/Technical Name	character	30	Parameter/Technical Name that was selected as requiring PCS limit check from Table A-21.	Auto populated Parameter/Technical Name that was selected as requiring PCS limit check from Table A-21.	PD
Data Type	character	2	Enter the data type of this parameter.	Auto populated from data type entered in Table A-22.	PD
Engineering Units	character	30	Enter the engineering units defining this parameter.		PD
Number of Limit Sets (Max 3)	character	1	Enter the number of limits sets that are required.	1-3	PD
Lower Limit Set 1	number	14	Enter the lower limit in engineering units for set 1.		PD
Upper Limit Set 1	number	14	Enter the upper limit in engineering units for set 1.		PD
Lower Limit Set 2	number	14	Enter the lower limit in engineering units for set 2.		PD
Upper Limit Set 2	number	14	Enter the upper limit in engineering units for set 2.		PD
Lower Limit Set 3	number	14	Enter the lower limit in engineering units for set 3.		PD
Upper Limit Set 3	number	14	Enter the upper limit in engineering units for set 3.		PD



TABLE A-26 HEALTH AND STATUS PCS LIMIT CHECK SERVICE DEFINITION

Parameter Correlation Number	Parameter/ Technical Name	Data Type	Engineering Units	Number of Limit Sets (Max 3)	Lower Limit Set 1	Upper Limit Set 1	Lower Limit Set 2	Upper Limit Set 2	Lower Limit Set 3	Upper Limit Set 3

**FIGURE A-27 INSTRUCTIONS FOR COMPLETING COMMAND CORRELATION NUMBER ENTRY AND COMMAND  
SOURCE REQUIREMENTS (TABLE A-27)  
(Page 1 of 2)**

Data Field	Field Type	Length	Description	Allowed Range	Definition Responsibility
Command Correlation Number	character	7	Enter a unique identifier for each command. The first three characters should be an alphanumeric identifier which should be used to group associated payload measurements. The remaining four characters should be numeric and in sequential order for each of the three alphanumeric identifiers (i.e., each alphanumeric set should start with the number 1). This field is used to correlate the data between tables.		PD
Command Mnemonic	character	20	Enter a unique descriptive name. This mnemonic will be used to issue this command at the POIC.		PD
Command Name	character	89	Enter a descriptive technical name for each command generated by the Payload.		PD
Command Description	character	250	Enter the complete text that describes the action performed by the command.		PD
Command PUI	character	13	Enter the PUI which identifies this primitive level measurement. This PUI is used to identify this command.		PEI
PLMDM Initiated	character	1	Check this box if this command may be issued from the payload MDM; otherwise leave blank. This field is a flag to indicate that this command is issued from the payload MDM. Required Definition in Table A-29.		PD

**FIGURE A-27 INSTRUCTIONS FOR COMPLETING COMMAND CORRELATION NUMBER ENTRY AND COMMAND  
SOURCE REQUIREMENTS (TABLE A-27)  
(Page 2 of 2)**

Data Field	Field Type	Length	Description	Allowed Range	Definition Responsibility
PCS Initiated	character	1	Check this box if this command may be issued from the Portable Computer System; otherwise leave blank. This field is a flag to indicate that this command may be issued from the Portable Computer System. Required definition in Table A-28. If this box is checked then the Low Rate Command – PCS field in the Software Interface Applicability Summary Table will contain an "X".		PD
Timeliner Initiated	character	1	Check this box if this command may be issued from the Timeliner; otherwise, leave blank. This field is a flag to indicate that this commands issued from the Timeliner. Requires definition in Tables A-29 and A-40. If this box is checked then the Low Rate Command – Timeliner field in the Software Interface Table will contain an "X".	Timeline cannot initiate hazardous commands.	PD
POIC Initiated	character	1	Check this box if this command may be issued from the ground; otherwise, leave blank. This field is a flag to indicate that this command may be issued from the ground. Requires definition in Table A-24. If this box is checked the, the Low Rate Command – POIC Uplink field in the Software Interface Applicability Summary Table will contain an "X".		PD
MPLM Required	character	1	Check this box if this command is to be issued from the Shuttle; otherwise, leave blank. this field is a flag to indicate that this command may be issued from the Shuttle.		PD

TABLE A-27 COMMAND CORRELATION INITIALIZATION AND COMMAND SOURCE REQUIREMENT

Command Correlation Number	Command Mnemonic	Command Name	Command Description	Command PUI	PLMDM Initiated	PCS Initiated	Timeliner Initiated	POIC Initiated	MPLM Required

**FIGURE A-28 INSTRUCTIONS FOR COMPLETING PCS COMMAND DEFINITION (TABLE A-28)**

Data Field	Field Type	Length	Description	Allowed Range	Definition Responsibility
Command Correlation Number	character	7	Enter a unique identifier for each command. The first three characters should be an alphanumeric identifier which should be used to group associated payload measurements. The remaining four characters should be numeric and in sequential order for each of the three alphanumeric identifiers (i.e., each alphanumeric set should start with the number 1). This field is used to correlate the data between tables.		PD
Command Mnemonic	character	20	Enter a unique descriptive name. This mnemonic will be used to issue this command at the POIC.		PD
Command PUI	character	13	Enter the PUI which identifies this primitive level measurement. This PUI is used to identify this command.		PEI

### TABLE A-28 PCS COMMAND DEFINITION

[illegible]

**FIGURE A-29 INSTRUCTIONS FOR COMPLETING PAYLOAD MDM COMMAND DEFINITION (TABLE A-29)**  
**(Page 1 of 2)**

<b>Data Field</b>	<b>Field Type</b>	<b>Length</b>	<b>Description</b>	<b>Allowed Range</b>	<b>Definition Responsibility</b>
Command Correlation Number	character	7	Command Correlation Number that was selected as PLMDM Initiated Command from Table A-27.	Auto Populated from parameters that were selected as Payload MDM Initiated from Table A-27.	PD
Command Mnemonic	character	20	Command Mnemonic that was selected as Payload MDM Initiated Command from Table A-27.	Auto Populated from parameters that were selected as Payload MDM Initiated from Table A-27.	PD
Command PUI	character	13	Command PUI that was selected as PLMDM Initiated Command from Table A-27.	Auto Populated from parameters that were selected as Payload MDM Initiated from Table A-27.	PD
Command Type/Variable Length	character	1	All commands issued from the Payload MDM shall be fixed in length.	F	PD
Startup	character	1	Check this box if this is a startup command, to be issued in response to a payload startup notification command; otherwise, leave blank. This field is a flag to indicate that this command is a startup command.		PD
Standby	character	1	Check this box if this is a standby command, to be issued in response to a payload standby notification command; otherwise, leave blank. This field is a flag to indicate that this command is a standby command.		PD

**FIGURE A-29 INSTRUCTIONS FOR COMPLETING PAYLOAD MDM COMMAND DEFINITION (TABLE A-29)**  
**(Page 2 of 2)**

<b>Data Field</b>	<b>Field Type</b>	<b>Length</b>	<b>Description</b>	<b>Allowed Range</b>	<b>Definition Responsibility</b>
Shutdown	character	1	Check this box if this is a shutdown command, to be issued in response to a payload shutdown notification command; otherwise, leave blank. This field is a flag to indicate that this command is a shutdown command.		PD
Exception Response Command	character	1	Check this box if this command is initiated on-board, in response to a limit exception.		PD



TABLE A-29 PAYLOAD MDM COMMAND DEFINITION

Command Correlation Number	Command	Command	Command	Startup	Standby	Shutdown	Telemetry

**FIGURE A-30 INSTRUCTIONS FOR COMPLETING COMMAND DEFINITION (TABLE A-30)**  
**(Page 1 of 2)**

<b>Data Field</b>	<b>Field Type</b>	<b>Length</b>	<b>Description</b>	<b>Allowed Range</b>	<b>Definition Responsibility</b>
Command Correlation Number	character	7	Command Correlation Number that was selected as POIC Initiated Command from Table A-27.	Auto Populated from parameters that were selected as POIC Initiated from Table A-27.	PD
Command Mnemonic	character	20	Command Mnemonic that was selected as POIC Initiated Command from Table A-27.	Auto Populated from parameters that were selected as POIC Initiated from Table A-27.	PD
Time Constraint	integer	14	Enter the number of seconds after the command in which no other commands are issued.		PD
Verification Delay	integer	14	Enter the number of seconds to continue checking telemetry verifiers after a command has been issued. If no verifiers are required, a value of 0 is supplied.		PD
Telemetry Verification	character	1	Check this box if the command requires telemetry verification.	*Note: This capability is only available for parameters that are being processed at the HOSC.	PD
Length	integer	3	Enter the number of words required to hold the command as a digital signal, starting with command data word 1.	13-53 Min length of 13 words required. The length shall not include the CCSDS Header, spare word, legal station mode, and checksum.	PD
Variable Length	character	1	Check this box if this command is a variable length command; otherwise, leave blank.	If left blank, then a value must be entered in the length field.	PD
Critical	character	1	Check this box if this command is a Critical command; otherwise, leave blank.		PD

FIGURE A-30 INSTRUCTIONS FOR COMPLETING COMMAND DEFINITION (TABLE A-30)  
(Page 2 of 2)

Data Field	Field Type	Length	Description	Allowed Range	Definition Responsibility
Hazard	character	1	Check this box if this command is a hazardous command; otherwise, leave blank. Hazardous command may not be included in timeliner automated procedures.	If hazard is checked then variable length must not be checked and a value must be entered in the length field and initial state must be '0' for disabled.	PD
Legal Station Mode	character	20	Enter the ISS legal station mode under which the command may be initiated. Must select a legal station mode.	Standard or Microgravity or Both	PD
Initial State	character	1	Enter the initial state of the command	'E'nabled or 'D'isabled	PD

TABLE A-30 COMMAND DEFINITION

Command Correlation Number	Command Mnemonic	Time Constraint	Verification Delay	Telemetry Verification	Length	Variable Length	Critical	Hazard	Legal Station Mode

**FIGURE A-31 INSTRUCTIONS FOR COMPLETING COMMAND TELEMETRY VERIFICATION DEFINITION (TABLE A-31)**

<b>Data Field</b>	<b>Field Type</b>	<b>Length</b>	<b>Description</b>	<b>Allowed Range</b>	<b>Definition Responsibility</b>
Command Correlation Number	character	7	Command Correlation Number that was selected as POIC Initiated Command from Table A-27.	Auto Populated from parameters selected to be verified from Table A-27.	PD
Command Mnemonic	character	20	Command Mnemonic that was selected as POIC Initiated Command from Table A-27.	Auto Populated from parameters selected to be verified from Table A-27.	PD
Command PUI	character	13	Command PUI that was selected as POIC Initiated Command from Table A-27.	Auto Populated from parameters selected to be verified from Table A-27.	PEI
Verification PCN	character	7	Enter the Parameter Correlation Number that will contain the verification data.	Auto populated from list of parameters marked for processing by the HOSC. PCN is only valid if it has been defined on Table A-1 and is located in a packet.	PD
Verification Telemetry PUI	character	13	Enter the telemetry PUI that will contain the verification data.	Auto populated from the PCN that was entered above.	PD
Verification State Code	character	12	Enter the state code expected for response verification. If this field is used, then do not fill in the next two fields.		PD
Verification Range-Low	integer	14	Enter the minimum data value of the parameter converted to engineering units. If this field is used, then do not fill in the Verification State Code field.		PD
Verification Range-High	integer	14	Enter the maximum data value of the parameter converted to engineering units. If this field is used, then do not fill in the Verification State Code field.		PD

TABLE A-31 COMMAND TELEMETRY VERIFICATION DEFINITION

Command Correlation Number	Command Mnemonic	Command PUI	Verification Telemetry PCN	Verification Telemetry PUI	Verification State Code	Verification Range-Low	Verification Range-High

**FIGURE A-32 INSTRUCTIONS FOR COMPLETING COMMAND DEFINITION #3 (TABLE A-32)**  
**(Page 1 of 3)**

Data Field	Field Type	Length	Description	Allowed Range	Definition Responsibility
Command Correlation Number	character	7	Command Correlation Number that was selected as POIC Initiated Command from Table A-27.	Auto Populated from commands that were selected as POIC Initiated from Table A-27.	PD
Command Mnemonic	character	20	Command Mnemonic that were selected as POIC Initiated Command from Table A-27.	Auto Populated from commands that were selected as POIC Initiated from Table A-27.	PD
Command PUI	character	13	Command PUI that were selected as POIC Initiated Command from Table A-27.	Auto Populated from commands that were selected as POIC Initiated from Table A-27.	PD
Command Length	number	3	The length of the command in words.	Auto populated from commands that were selected in Table A-30.	PD
Field Mnemonic	character	20	Enter a unique user-friendly mnemonic for the command field.	Invalid characters are: '.', ';;', '/', 'space'	PD
Start Word	integer	3	Enter the start word of a command field. The first word of the command is 1. The command header is not included.	1 to 53	PD
Start Bit	integer	2	Enter the bit within the start word where the field begins. The first bit of a word is bit 0.		PD
Field Length	integer	5	Enter the length of the field. If using string data, then use number of bytes; otherwise use number of bits. Use null for variable length fields.	Data type dependent	PD
Variable Field Length	character	1	Check if this command field is variable length; otherwise, leave blank.		PD
Field Description	character	100	Text description of the command field.		PD

**FIGURE A-32 INSTRUCTIONS FOR COMPLETING COMMAND DEFINITION #3 (TABLE A-32)**  
(Page 2 of 3)

Data Field	Field Type	Length	Description	Allowed Range	Definition Responsibility
Input Data Type	character	1	Enter the data type.	A – Alphanumeric String B – Binary D – Decimal G – Scientific Notation H – Hexadecimal O – Octal	PD
Uplink Data Type	character	5	Enter the data type of the data to be uplinked.	FEEE – IEEE Floating Point FIBM – IBM Floating Point IBCD – Binary Coded Decimal ICLK – Checksum IDIS – Discrete IDSI – Distended Signed Integer IMAG – Signed Integer IPAR – Parity Bit ITWO – Two's Complement Signed Integer IUNS – Unsigned Integer IUNSB – Unsigned byte-swapped integer IUNSW – Unsigned word-swapped integer SASC – ASCII Characters SASCB – ASCII Characters (Byte-Swapped) SEBC – EBC DIC Characters SUND – Undefined Byte String	PD
Predefined Or Modifiable	character	1	Define the command field type as predefined or modifiable.	P – Predefined M – Modifiable	PD



**FIGURE A-32 INSTRUCTIONS FOR COMPLETING COMMAND DEFINITION #3 (TABLE A-32)**  
**(Page 3 of 3)**

Data Field	Field Type	Length	Description	Allowed Range	Definition Responsibility
Data/value	character	256	Enter the fixed data value for predefined fields or the initial data value for modifiable fields.		PD
Engineering Units	character	30	Enter the engineering units in which the data is interpreted.		PD
Range Low	character	32	Enter the low end range in Engineering Units for valid command field value.		PD
Tolerance	float	32	For integer up link values to which calibration has been applied, the maximum deviation allowed between the calibration value and the nearest integer. If no tolerance is specified for an integer uplink value, the calibration must result in an integer value.	Default value is null	PD
Range High	character	32	Enter the high end of range in Engineering Units for valid command field value.		PD
Calibration Type	character	2	Enter the calibration type.	N – No Calibration PC – Polynomial PP – Point Pair SC – State Code	PD
Calibration Switching	character	1	Check this box if this command requires calibration switching.		PD



### INSTRUCTIONS FOR COMPLETING PAYLOAD MDM COMMAND DEFINITION #2\* PSIV

Data Field	Field Type	Length	Description	Allowed Range	Definition Responsibility
Command Correlation Number	character	7	Command Correlation Number that was selected as PLMDM Initiated Command from Table A-27.	Auto Populated from parameters that were selected as Payload MDM Initiated from Table A-27.	PD
Command Mnemonic	character	20	Command Mnemonic that was selected as PLMDM Initiated Command from Table A-27.	Auto Populated from parameters that were selected as Payload MDM Initiated from Table A-27.	PD
Command Length	number	3	Command Length that was entered in Table A-32.	Auto Populated from length entered in Table A-32.	PD
Start Word	number	2	The word number for each command word (16 bits in length). In a command, start with word 1.	Auto Converted for Storage in an onboard Configuration Data Table A-32.	PD
Command Data	hex number	4	The hexadecimal value of each data word. Use additional rows to define commands of lengths up to 53 words. Any payload unique checksum should be the last data word.	Auto Converted for Storage in an onboard Configuration Data Table A- 32.	PD
Input Data Type	character	1	The data type as defined in Table A-32.	Auto Converted for Storage in an onboard Configuration Data Table A-32.	PD

\* Note: This information is to be used by PSIV and not payload developers.

**PAYLOAD MDM COMMAND DEFINITION #2\* PSIV**

Command Correlation Number	Command Mnemonic	Command Length	Start Word	Command Data	Input Data Type

\* Note: This information is to be used by PSIV and not payload developers.

**FIGURE A-33 INSTRUCTIONS FOR COMPLETING COMMAND POINT PAIR CALIBRATION DEFINITION (TABLE A-33)**

<b>Data Field</b>	<b>Field Type</b>	<b>Length</b>	<b>Description</b>	<b>Allowed Range</b>	<b>Definition Responsibility</b>
Command Correlation Number	character	7	Command Correlation Number that was selected as needing Point Pair calibration.	Auto Populated from commands that were selected as needing point pair calibration from Table A-32.	PD
Command Mnemonic	character	20	Command Mnemonic Number that was selected as needing Point Pair calibration.	Auto Populated from commands that were selected as needing point pair calibration from Table A-32.	PD
Field Mnemonic	character	20	The unique user-friendly mnemonic of the command field to which the calibration set pair applies.	Auto Populated from commands that were selected as needing point pair calibration from Table A-32.	PD
Default Set Number	integer	3	Enter the set number of the default calibration set.		PD
Set Number	integer	3	Identify the Point Pair calibration set number for the command field that is to be calibrated. Maximum of 100 sets for each command field.	Max 100 sets.	PD
Pair Count	integer	14	Enter the decimal integer representing the raw count value of the point pair.		PD
Pair Value	float	16	Enter the Engineering Unit equivalent of the COUNTS column. Include sign and decimal points, if applicable.		PD

TABLE A-33 COMMAND POINT PAIR CALIBRATION DEFINITION

Command Correlation Number	Command Mnemonic	Field Mnemonic	Default Set Number	Set Number	Pair Count	Pair Value

**FIGURE A-34 INSTRUCTIONS FOR COMPLETING COMMAND STATE CODE CALIBRATION DEFINITION (TABLE A-34)**

<b>Data Field</b>	<b>Field Type</b>	<b>Length</b>	<b>Description</b>	<b>Allowed Range</b>	<b>Definition Responsibility</b>
Command Correlation Number	character	7	Command Correlation Number that was selected as needing State Code calibration.	Auto Populated from commands that were selected as needing state code calibration from Table A-32.	PD
Command Mnemonic	character	20	Command Mnemonic Number that was selected as needing State Code calibration.	Auto Populated from commands that were selected as needing state code calibration from Table A-32.	PD
Field Mnemonic	character	20	The unique user-friendly mnemonic of the command field to which the calibration set pair applies.	Auto Populated from commands that were selected as needing state code calibration from Table A-32.	PD
Default Set Number	integer	3	Enter the set number of the default calibration set.		PD
Set Number	integer	3	Identify the State Code calibration set number for the command field that is to be calibrated. Maximum of 100 sets for each command field.	Max 100 sets.	PD
State Code	character	12	Enter state code equivalent of the COUNTS column.		PD
Counts	integer	14	Enter the decimal integer representing the raw count value of the State Code.		PD

TABLE A-34 COMMAND STATE CODE CALIBRATION DEFINITION

Command Correlation Number	Command Mnemonic	Field Mnemonic	Default Set Number	Set Number	State Code	Counts



**FIGURE A-35 INSTRUCTIONS FOR COMPLETING COMMAND POLYNOMIAL CALIBRATION DEFINITION (TABLE A-35)**

<b>Data Field</b>	<b>Field Type</b>	<b>Length</b>	<b>Description</b>	<b>Allowed Range</b>	<b>Definition Responsibility</b>
Command Correlation Number	character	7	Command Correlation Number that was selected as needing Polynomial calibration.	Auto Populated from commands that were selected as needing Polynomial Calibration from Table A-32.	PD
Command Mnemonic	character	20	Command Mnemonic Number that was selected as needing Polynomial calibration.	Auto Populated from commands that were selected as needing Polynomial Calibration from Table A-32.	PD
Field Mnemonic	character	20	The unique user-friendly mnemonic of the command field to which the calibration set pair applies.	Auto Populated from commands that were selected as needing Polynomial Calibration from Table A-32.	PD
Default Set Number	integer	3	Enter the set number of the default calibration set.		PD
Set Number	integer	3	Identify the Polynomial Coefficient calibration set number for the command field that is to be calibrated. Maximum of 100 sets for each command field.	Max 100 sets.	PD
Low Counts	integer	14	Enter the minimum raw counts value supported by this calibration set.		PD
High Counts	integer	14	Enter the maximum raw counts value supported by this calibration set.		PD
Degree	integer	1	Define the degree (1-5) of the polynomial equation.	Min – 1 Max – 5	PD
Coefficient 0	float	16	Enter the polynomial coefficient 0.		PD
Coefficient 1	float	16	Enter the polynomial coefficient 1.		PD
Coefficient 2	float	16	Enter the polynomial coefficient 2.		PD
Coefficient 3	float	16	Enter the polynomial coefficient 3.		PD
Coefficient 4	float	16	Enter the polynomial coefficient 4.		PD
Coefficient 5	float	16	Enter the polynomial coefficient 5.		PD

**TABLE A-35 COMMAND POLYNOMIAL CALIBRATION DEFINITION**

[illegible]

**FIGURE A-36 INSTRUCTIONS FOR COMPLETING COMMAND CALIBRATION SWITCHING DEFINITION (TABLE A-36)**

<b>Data Field</b>	<b>Field Type</b>	<b>Length</b>	<b>Description</b>	<b>Allowed Range</b>	<b>Definition Responsibility</b>
Command Correlation Number	character	7	Command Correlation Number that was selected as needing Calibration Switching.	Auto Populated from commands that were selected as needing Calibration Switching from Table A-32.	PD
Command Mnemonic	character	10	Command Mnemonic Number that was selected as POIC initiated Command.	Auto Populated from commands that were selected as needing Calibration Switching from Table A-32.	PD
Field Mnemonic	character	20	The unique user-friendly mnemonic of the command field to which the calibration set pair applies.	Auto Populated from commands that were selected as needing Calibration Switching from Table A-32.	PD
Set Number	integer	3	Identify the calibration set number for the command field that is to be calibrated. Maximum of 100 sets for each command field.	Max 100 sets.	PD
Calibration Switch Field Mnemonic	character	20	Identify the command field whose data value is compared with the LOW-RANGE and HIGH-RANGE values to determine whether this calibration set is to be applied.		PD
Low Range	character	32	Enter the minimum calibrated value that the command field referenced by Field Mnemonic may have in order for this calibration set to be applied.		PD
High Range	character	32	Enter the maximum calibrated value that the command field referenced by Field Mnemonic may have in order for this calibration set to be applied.		PD
State Code	character	12	Enter state code equivalent of the COUNTS column.		PD

TABLE A-36 COMMAND CALIBRATION SWITCHING DEFINITION

Command Correlation Number	Command Mnemonic	Field Mnemonic	Set Number	Calibration Switch Field Mnemonic	Low Range	High Range	State Code

**FIGURE A-37 INSTRUCTIONS FOR COMPLETING POP-UP BROADCAST DATA IDENTIFICATION  
AND PAYLOAD UNIQUE ANCILLARY DATA SET (TABLE A-37)**

Data Field	Field Type	Length	Description	Allowed Range	Definition Responsibility
<b>POP-UP BROADCAST DATA IDENTIFICATION</b>					
Using Broadcast Ancillary Data?					
Yes	character	1	Select yes if payload will require Broadcast Data. If yes is selected, then the Broadcast Ancillary Data field in the Software Interface Applicability Table will contain an "X".		PD
No	character	1	Select no if payload will not require Broadcast Data.		PD
Using Broadcast Time?					
Yes	character	1	Select yes if payload will require Broadcast Time. If yes is selected, then the Broadcast Time field in the Software Interface Applicability Table will contain an "X".		PD
No	character	1	Select no if payload will not require Broadcast Time.		PD
<b>PAYLOAD UNIQUE ANCILLARY DATA SET</b>					
Data Set Number	number	3	Enter the number of the payload unique ancillary data set required by the payload. Allowable number are 1 through 100. Enter each data set required on a separate line.	1 through 100.	PD
Transmit Rate	number	2	Always 1.0 Hz.	1.0 Hz (Fixed)	Automated

TABLE A-37 POP-UP BROADCAST DATA IDENTIFICATION AND PAYLOAD UNIQUE ANCILLARY DATA SET

Data Set Number	Transmit Rate	Word Number	System	Rack Location	Description	Word PUI	Primitive PUI	Data Type	Bit Offset	Using Broadcast Data?		Using Broadcast Time?	
										Yes	No	Yes	No

**FIGURE A-38 INSTRUCTIONS FOR COMPLETING ANCILLARY DATA REQUEST FORM (TABLE A-38)**

<b>Data Field</b>	<b>Field Type</b>	<b>Length</b>	<b>Description</b>	<b>Allowed Range</b>	<b>Definition Responsibility</b>
Parameter/ Technical Name	character	30	Enter a unique name to identify this parameter.		PD
Group PUI	character	13	Enter the PUI for each group.		PD
Word PUI	character	13	Enter the PUI for each word.		PD
Primitive PUI	character	13	Enter the PUI for each primitive.		PD
Bit Offset	number	2	Enter the start bit number within each data word for this parameter. The first bit number is zero.	0-15	PD
Parameter Description	character	250	Enter the description of the requested ancillary parameter.		PD
Data Set Number	number	3	The number of the unique payload ancillary data set to which this requested ancillary data item has been assigned will be entered by PEI.	1 – 100	PEI
Word Number	number	2	The word number within the unique payload ancillary data set to which this requested ancillary data item has been assigned will be entered by PEI.	10 – 32	PEI

TABLE A-38 ANCILLARY DATA REQUEST FORM

Parameter/ Technical Name	Group PUI	Word PUI	Primitive PUI	Bit Offset	Parameter Description	Data Set Number	Word Number



**FIGURE A-39 INSTRUCTIONS FOR COMPLETING LRDL FILE TRANSFER SERVICE (TABLE A-39)**

<b>Data Field</b>	<b>Field Type</b>	<b>Length</b>	<b>Description</b>	<b>Allowed Range</b>	<b>Definition Responsibility</b>
File Name	character	25	Enter a descriptive name for the file. (contains the complete path-needs to start with "/")		PD
File ID Number	number	3	A unique identification number for each separate file.	0-500	PSIV
File Size	number	6	Enter the total number of 8-bit bytes contained in the data file.		PD
File Description	character	250	Briefly describe the type of file and its application.		PD
File Access Authorization					
A. Read	character	1	Check this box if this payload has Read Access Authorization for this file on the Payload MDM. If this box is checked, then the File/Data Load field of the Software interface Summary Table will contain an "X".		PD
B. Write	character	1	Check this box if this payload has Write Access Authorization for this file on the Payload MDM. If this box is checked, then the File Dump field of the Software Interface Summary Table will contain an "X".		PD

TABLE A-39 LRDL FILE TRANSFER SERVICE

File Name	File ID Number	File Size (bytes)	File Description	File Access Authorization	
				Read	Write

**FIGURE A-40 INSTRUCTIONS FOR COMPLETING TIMELINER DEFINITION (TABLE A-40)**  
**(Page 1 of 2)**

Data Field		Field Type	Length	Description	Allowed Range	Definition Responsibility
Bundle Name		character	20	Enter a descriptive name for each separate bundle.	(All caps)	PD
Bundle ID Number		number	5	A unique identification number for each Timeliner procedure bundle.	0-65535 Maximum of 50 out of the 500 possible bundles can be active	PSIV
Bundle File Name		character	25	A unique file name that contains the complete path and starts with a "\".		PSIV
Bundle file Description		character	250	Enter descriptive information about the bundle file, such as how the bundle is initiated.		PD
<u>Bundle Request Authorization Code</u>						
A.	Install Bundle	character	1	Check this box if this payload is authorized to install this bundle.	Refer to document XXX for future information on Timeliner bundles.	PD
B.	Halt Bundle	character	1	Check this box if this payload is authorized to halt this bundle.		PD
C.	Remove Bundle	character	1	Check this box if this payload is authorized to remove this bundle.		PD
Sequence Name		character	32	Enter a descriptive name of the Timeliner procedure bundle sequence.	(All caps) Reference Payload Timeliner Automated Procedures, SSP 58709-ANX7 for a description of the required naming convention for Timeliner bundles.	PD
Sequence Identification Number		number	5	Enter a unique identification number for each Timeliner procedure bundle sequence.	0-65535	PSIV

**FIGURE A-40 INSTRUCTIONS FOR COMPLETING TIMELINER DEFINITION (TABLE A-40)**  
**(Page 2 of 2)**

Data Field		Field Type	Length	Description	Allowed Range	Definition Responsibility
D.	Start Sequence	character	1	Check this box if this payload is authorized to start this procedure/sequence.		PD
E.	Stop Sequence	character	1	Check this box if this payload is authorized to stop this procedure/sequence.		PD
F.	Resume Sequence	character	1	Check this box if this payload is authorized to resume this procedure/sequence.		PD

### TABLE A-40 TIMELINER DEFINITION

[illegible]

**FIGURE A-41 INSTRUCTIONS FOR COMPLETING PCS DISPLAY DEFINITION (TABLE A-41)**

<b>Data Field</b>	<b>Field Type</b>	<b>Length</b>	<b>Description</b>	<b>Allowed Range</b>	<b>Definition Responsibility</b>
Display Name	character	30	Enter a unique display name.		PD
Display Description	character	30	Enter a description of display desired.		PD
Display Number	integer	5	Enter a unique display number.		PSIV
Parameter Correlation Number	character	7	Parameter Correlation Number that was selected as PCS displayed from Table A-21.	Selection list is auto populated from parameters selected as PCS displayed on Table A-21.	PD
Parameter Name	character	30	Parameter/Technical Name that was selected as PCS displayed from Table A-21.	Selection list is auto populated from parameters selected as PCS displayed on Table A-21.	PD
Primitive PUI	character	13	Primitive PUI that were selected as PCS displayed and defined in Table A-21.	Selection list is auto populated from parameters that were selected in Table A-21.	PD
Command Correlation Number	character	7	Command Correlation Number that selected as PCS Initiated Command from A-27.	Selection list is auto populated commands that were selected as PCS Initiated from Table A-27.	PD
Command Name	character	89	Command Name that were selected as PCS Initiated Command from Table A-27.	Selection list is auto populated commands that were selected as PCS Initiated from Table A-27.	PD
Command PUI	character	13	Command PUI that was selected as PCS Initiated Command from Table A-27.	Selection list is auto populated from commands that were selected as PCS Initiated from Table A-27.	PD

TABLE A-41 PCS DISPLAY DEFINITION

Display Name	Display Description	Display Number	Parameter Correlation Number	Parameter Name	Primitive PUI	Command Correlation Number	Command Name	Command PUI

**FIGURE A-42 INSTRUCTIONS FOR COMPLETING VIDEO REQUIREMENTS (TABLE A-42)**

<b>Data Field</b>	<b>Field Type</b>	<b>Length</b>	<b>Description</b>	<b>Allowed Range</b>	<b>Definition Responsibility</b>
Video Uplink	character	1	Select 'yes' if the payload requires video uplink. Select 'no' if the payload does not require video uplink.	(yes or no) If yes, then PD is required to fill in data for rate and duration.	PD
Rate	number	2	Specify the rate of the video uplink.	Mbps	PD
Duration	number	5	Specify the duration of the digital video uplink.	0 – 99999 seconds	PD
Video (digital) Downlink via HRDL	character	1	Select 'yes' if the payload requires digital video downlink via the HRDL. Select 'no' if the payload does not require video downlink via the HRDL.	(yes or no) If yes, then PD is required to fill in data for rate and duration.	PD
Rate	number	2	Specify the rate of the digital video downlink.	Mbps	PD
Duration	number	5	Specify the duration of the digital video downlink.	0 – 99999 seconds	PD
Video (analog) Downlink via ISS Video Baseband Signal Processor	character	1	Select 'yes' section if the payload requires analog video downlink via ISS Video Baseband Signal Processor. Select 'no' if the payload does not require analog video downlink via ISS Video Baseband Signal Processor.	(yes or no) If yes, then PD is required to select values for Resolution, Frame Rate and Duration.	PD
Resolution	character	1	Select either 8-bit or 6-bit video downlink resolution.	8-bit or 6-bit	PD
Frame Rate	character	4	Select frame rate for video downlink.	1.875 half-frame/sec 7.5 half-frame/sec 15 half-frame/sec 30 half-frame/sec 30 full-frame/sec	PD
Duration	number	5	Specify the duration of the analog video downlink	0 – 99999 seconds	PD



**TABLE A-42 VIDEO REQUIREMENTS**

Video Uplink?	YES	NO
Rate		
Duration		
Video (digital) Downlink via HRDL?	YES	NO
Rate		
Duration		
Video (analog) Downlink via ISS Video Baseband Signal Processor?	YES	NO
Resolution		
Frame Rate		
Duration		

FIGURE A-43 INSTRUCTIONS FOR COMPLETING UNFINISHED SCREENS (TABLE A-43)

Data Field	Field Type	Length	Description	Allowed Range	Definition Responsibility
Check Mark	character	1	Check the box if you want to work on this screen.		PD
Unfinished Screens			Generated by database.		

TABLE A-43 UNFINISHED SCREENS

Check Mark	Unfinished Screens

**FIGURE A-44 INSTRUCTIONS FOR COMPLETING CUSTOMER CONTACT INFORMATION (TABLE A-44)**

<b>Data Field</b>	<b>Field Type</b>	<b>Length</b>	<b>Description</b>	<b>Allowed Range</b>	<b>Definition Responsibility</b>
First Name	character	25	First name of contact	Alphanumeric	PD
Middle Initial	character	1	Middle initial of contact	Alphanumeric	PD
Last Name	character	25	Last name of contact	Alphanumeric	PD
Title	character	35	Title	Alphanumeric	PD
Organization	character	35	Organization	Alphanumeric	PD
Street 1	character	35	Street address 1	Alphanumeric	PD
Street 2	character	35	Street address 2	Alphanumeric	PD
City	character	30	City	Alphanumeric	PD
State/Province	character	20	State or province	Alphanumeric	PD
Country	character	20	Country	Alphanumeric	PD
Zip/Postal Code	character	15	Zip code or postal code	Alphanumeric	PD
Other	character	20	Other postal information	Alphanumeric	PD
Internal Mail Code	character	15	Internal Mail Code	Alphanumeric	PD
Phone Number	character	15	Telephone number	Alphanumeric	PD
Fax Number	character	15	Fax number	Alphanumeric	PD
Pager Number	character	15	Pager number	Alphanumeric	PD
Email Address	character	25	Email address	Alphanumeric	PD
WWW Page Address	character	25	Worldwide web page address or URL	Alphanumeric	PD

**TABLE A-44 CUSTOMER CONTACT INFORMATION**

First Name	
Middle Initial	
Last Name	
Title	
Organization	
Street 1	
Street 2	
City	
State/Province	
Country	
Zip/Postal Code	
Other	
Internal Mail Code	
Phone Number	
Fax Number	
Pager Number	
Email Address	
WWW Page Address	

FIGURE A-45 INSTRUCTIONS FOR COMPLETING GENERAL INFORMATION (TABLE A-45)

Data Field	Field Type	Length	Description	Allowed Range	Definition Responsibility
General Information	character	250	Enter general information regarding this payload.	Text	PD

TABLE A-45 GENERAL INFORMATION

General Information	

FIGURE A-46 INSTRUCTIONS FOR COMPLETING PAYLOAD DESCRIPTION (TABLE A-46)

Data Field	Field Type	Length	Description	Allowed Range	Definition Responsibility
Payload Description	character	250	Enter a description of the payload, including functions, operations and relationship to other payloads.	Alphanumeric	PD



TABLE A-46 PAYLOAD DESCRIPTION

Payload Description	

(This Page Intentionally Left Blank)

## **APPENDIX B**

### **C&DH DATA BASE IMPLEMENTATION REQUIREMENTS**

The Payload Data Library C&DH data base structure and user interface shall be implemented per the requirements outlined herein. This includes adherence to the table content and format defined in Appendix A as well as the sample screen layouts provided in section B.8. Any deviation from these requirements must be approved by PEI.

Detailed requirements to be defined include the following:

- data base structure
- tabular list format
- frame-based data manipulation
- table navigation
- report generation
- special functions
- C&DH data set configuration management
- sample screen layouts

#### **B.1 DATA BASE STRUCTURE**

The PDL data base structure shall be implemented to accommodate the co-existence of the same payload with different flight assignments. The Parameter Correlation Numbers shall be payload-unique and flight-unique. Payloads and sub-rack payloads shall be able to reuse and reassign parameter correlation numbers for each without affecting previous or future flight data.

#### **B.2 TABULAR LIST FORMAT**

The format of data entry forms presented by PDL and viewed by a user shall correspond to Tables A-1 through A-46. The data columns within a table shall be visible on one screen in a tabular format, to the maximum extent possible, for all tables. Large tables, in which the number of columns exceeds 9, shall be accommodated by maximizing the viewable screen area and/or separating the table into two or more parts per the screen examples shown in section B.8. This includes the following tables:

- A-iii Payload Data
- A-1 Parameters which require ISS onboard or ground processing
- A-2 HOSC/POIC Telemetry Measurement Definitions
- A-4 HOSC/POIC Parameters requiring Polynomial Calibration
- A-8 HOSC/POIC Parameters requiring Limit Sensing
- A-10 Payload LRDL Data Packets
- A-11 Payload MDRL Data Packets
- A-12 Payload HRDL Data Packets
- A-14 Subset Data Definitions of the packet
- A-17 Telemetry Packet Definitions
- A-19 Telemetry Packet Data requiring counter sampling
- A-21 Telemetry Data requiring Health and Status
- A-22 Health and Status Word Definitions
- A-23 Health and Status data requiring Payload MDM Limit Check
- A-24 Health and Status data requiring PCS Polynomial Calibration
- A-26 Health and Status Data requiring PCS Limit Check Service
- A-27 Payload Commands
- A-29 Payload MDM Command Definition
- A-30 POIC/Ground Initiated Payload Commands
- A-32 Command Definition #3
- A-40 Timeliner Definition

### **B.3 FRAME-BASED DATA MANIPULATION**

The user shall have the ability to open multiple "viewing frames", or windows, of tabular data, up to a maximum of two, without logging into PDL twice. The user shall be able to use a selection button to minimize or maximize the size of the window, move the window on the desktop, and scroll data either left/right or up/down. Blocks of data shall also be selectable within a window for transfer to a second table within another window ("cut and paste"). This function shall be available for the following screens as a minimum:

- LRDL (A-10) and MRDL (A-11)
- LRDL (A-10) and HRDL (A-12)
- MRDL (A-11) and HRDL (A-12)
- PCS Poly Cal and PCS Linear Cal (A-24/A-25) and Polynomial (A-4)
- Payload Unique Ancillary Data Set (A-37) and Ancillary Data (A-38)

### **B.4 TABLE NAVIGATION**

Movement from one table to the next shall be accomplished using pull-down menus, and logic based upon the flow chart in Figure A-i. The user will not be given "random access" to all tables, but will be directed to appropriate tables based upon previous entries into "decision" forms and check boxes. Attempts to use a table not selected previously will result in an advisory message stating where to go to select that table. Up to a maximum of eight (8) control "buttons" shall be used at the bottom of the screen to select next/previous tables, save new data, revert to previous data, enter new data, delete a data item, request help, or exit. Once a payload/flight is selected, the user shall remain within that domain until the user purposely selects a new payload/flight combination.

### **B.5 REPORT GENERATION**

The user shall be able to obtain paper copies of C&DH data sets in a tabular format. The heading of each report shall contain, as a minimum, the following: table number, table name, payload name, flight designation, payload sub element, data set version, and control level. The footer of each report shall contain, as a minimum, the following date of report, time of report. The user shall be able to select a preview or printed report layout as either 1 report per page or 4 reports per page. Saved reports shall be available in either .pdf or .prn format.

### **B.5.1 STANDARD REPORT GENERATION**

A standard set of reports shall be selectable for any payload and flight. The format of these reports shall correspond to that shown in Tables A-1 through A-46. Reports shall also be available corresponding to Figures 3.1-1, 3.1.2.2-1, 3.1.2.2-2, 3.1.2.2-3, 3.1.2.2-4, 3.1.2.2-5, 3.1.2.2-6, 3.1.2.2-7, 3.1.2.2-8, 3.1.2.2-9, 3.2.1-1, 3.3.1-1, and 3.4.1-1.

### **B.5.2 CUSTOM REPORT GENERATION**

In addition, the user shall be able to select the contents of a custom report as long as all the selected fields are related to the same parent PUI or Correlation Number. The user shall be able to sort the contents of a custom report based on any selected parameter, and based on any field of one or more characters within that parameter. For such a custom report, the column headings shall correspond to the heads in the standard report for the same data field. A custom report can be larger or smaller than a standard report. It will be up to the user to assure the selected fields will result in a readable report.

### **B.5.3 COMPARISON REPORT GENERATION**

For any rack or sub-rack payload, a comparison function shall be available to the user allowing a New/old change list to be generated between any of the following subsets: individual data set control levels, archived data set and the latest data set, or specific ISS stages for any table.

The function shall check for matching Correlation Numbers in the PDL selected table and generate related reports as described below:

- A. If a match exists, the records shall be compared for differences. If a difference exists then the difference between the 2 records shall be printed. A label shall be printed next to the Correlation Number indicating to which subset the data item belongs. For example, for a comparison between an archived data set (old) and the latest data set (new), the resultant records would appear as follows:

	CCN	Command Length	Command Word	Command Value	Created/ Changed By	Created/ Changed Date
New	HWS8005			0000		
Old	HWS8005			000F		

This printout shall indicate that data has been changed within a Correlation Number record.

- B. If no match exists for the Correlation Number record from the new data set then the entire record shall be printed.

	CCN	Command Length	Command Word	Command Value	Created/ Changed By	Created/ Changed Date
New	HWS8005	50	31	0000		

This printout shall indicate that a new Correlation Number and its record has been added.

- C. If no match exists for the Correlation Number record from the old data set then the entire record shall be printed.

	CCN	Command Length	Command Word	Command Value	Created/ Changed By	Created/ Changed Date
Old	HWS8005	50	31	0000		

This printout shall indicate that an old Correlation Number and its record has been deleted.

## B.6 SPECIAL FUNCTIONS WITHIN FIELDS

Table B–1 defines the special functions to be carried out within certain fields of the C&DH data base. These functions include validation, decision logic, and default values.

## B.7 C&DH DATA SET CONFIGURATION MANAGEMENT

Each specific payload–unique and flight–unique C&DH data set shall be stored within PDL in the form of three separate versions: a preliminary version, an interim version, and a final version. Each version shall be reviewed and locked at the appropriate time prior to launch. These approval steps shall conform to the private, integrated and baselined control levels per the Payload Data Library Requirements Document, SSP 50478. Within the integrated control level, submitted and draft control sub–levels shall also be provided. A summary of this configuration management process is described below. The mechanism to accomplish this C&DH configuration management process shall be implemented within PDL. All L–minus milestones shown are approximate.

At L–24, Payload Developers define unique software requirements and start data entry into the C&DH PRELIMINARY data set in PDL with SSP 57002 as a guide.

At L-17, Payload Developers promote their PRELIMINARY C&DH data set from the private level to the submitted level. PEI enters program level data as well as reviews the data set for completeness and accuracy against SSP 57002.

At L-16, the data set is locked per Payload Software Control Panel (PSCP) directive and PEI promotes the PRELIMINARY data set to the draft level in PDL for preliminary deliveries. The PRELIMINARY data set remains locked.

At L-15, PRELIMINARY data sets are copied into an INTERIM data set and sent to the private level to allow Payload Developers to update their data. Within this time period, PSIV delivers the preliminary flight products to the customer.

At L-13, Payload Developers promote their INTERIM C&DH data set from the private level to the submitted level. PEI enters program level data and reviews the data set for completeness and accuracy against SSP 57002.

At L-12, the data set is locked by PSCP directive and PEI promotes the INTERIM data set to the draft level in PDL for interim deliveries. The INTERIM data set remains locked.

At L-11, The data set is exported to PSIV and the INTERIM data sets are copied into a FINAL data set and sent to the private level to allow Payload Developers to update their data. Within this time period, PSIV delivers the interim flight products to the customer.

At L-8, Payload Developers promote their FINAL C&DH data set from the private level to the submitted level. The data set is locked by PSCP directive and PEI promotes the FINAL data set to the draft level in PDL for final deliveries. A CR is prepared and taken to the PCB for baselining. Within this time period, PDL exports Payload Data Sets for Flight X to the HOSC/POIC for the final data base file, and PSIV delivers the final flight products to the customer.

At L+1, PDL deletes the payload's PRELIMINARY and INTERIM data sets and archives the FINAL data set.

## **B.8 SAMPLE SCREEN LAYOUTS**

The following sample screen layouts are to be used as a guide to construct PDL screens. The numbering scheme follows that of the flowchart shown in Figure A-i.



**TABLE B-1 SPECIAL FUNCTION DEFINITION**  
**(\*\*\* DENOTES A CHECK BOX FIELD)**

Data Field	Validation	Decision Logic	Default Value
<b>LOG ON</b>			
User ID			
Password			
<b>PAYLOAD SELECTION (A-ii)</b>		If Next then Payload Data	
Payload Rack			
Flight Effectivity			
Sub-Rack Payload			
<b>PAYLOAD DATA (A-iii)</b>		If Next then Main Decision Screen	
Payload Name	Value must not be Null		
Payload Acronym			
Payload ID			
Sub-payload Title			
Payload Sub-element Acronym			
Subset ID			
Payload Index			
Rack Assignment			
Flight Effectivity			
LDP	Value must not be Null at time of export		
Ethernet (MRDL) Address			
Payload Type/Element			
Functional System			
Generic Device Code			
Group Assembly			
<b>Main Decision Menu</b>		If Previous then Payload Data	
<b>Telemetry Measurement or Packet Decision</b>	If not Null then Counter Start Value must not be Null	If Previous then Main Decision Menu If Next then A-2	

**TABLE B-1 SPECIAL FUNCTION DEFINITION**  
**(\*\*\* DENOTES A CHECK BOX FIELD)**

Data Field	Validation	Decision Logic	Default Value
<b>TABLE A-1</b>		If Next then Telemetry Measurement or Packet Decision	
Parameter Correlation Number			
Parameter/Technical Name			
Parameter Description			
Primitive PI			
Signal Type			
Health and Status	If checked then this parameter shall be displayed in Table A-21	If checked then HOIC/POIC. Processed Telemetry must be checked also	
HOIC/POIC Processed Telemetry***			
Viewed by Pass/through MPLM***			
Safety Data* **	If checked then this parameter must have Health and Status checked also		
<b>TABLE A-2</b>		If Next then HOSC/POIC Main Telemetry Decision	
Data Type	Must not be Null If "IUND" then Calibration Type must be "N" If "IDIS", "IMAS", "IUNS", "ITWO", "ITWOW", "IBCD", OR "IDSI" then Low Raw Count and High Raw Count must be Null If "SASC", "SASCB", "SEBC", "SUND" or "TDMS" then Total Length is the number of bytes IF "SASC", "SASCB", "SEBC", or "SUND" then Total Length must be > or = 1 and < or = 255		

**TABLE B-1 SPECIAL FUNCTION DEFINITION**  
**(\*\*\* DENOTES A CHECK BOX FIELD)**

Data Field	Validation	Decision Logic	Default Value
	<p>If "IDIS", "IMAG", "IUNS", "ITWO", "ITWOW", "FEEE", "FIBM", "FMIL", "FNTL", "FSPL", "FVAX", "TECI", "TECS", "TEHS", "TGMT", "TGPC", "TOOI", "TISS", "TUDS", "TERT", "IBCD", "IDSI", "TTSM", or "TTWO" then Total Length is the number of bits</p> <p>If "IDIS" then Limit Switch Primitive PUI and Limit Default Set Number must be Null</p> <p>If "IDIS" of "IUNS" then Low Raw Count &gt; 0 or = 0</p> <p>If "IDIS" then Low Raw Count and High Raw Count must be &gt; or = 0 and &lt; or = one less than the 2 raised to the power of the Total Length</p> <p>If "IDIS" then Calibration Type must be SC</p> <p>If "IDIS" then Total Length must be &gt; or = 1 and &lt; or = 32</p> <p>If "IDIS" and Total Length is &lt; or = 5 then Low Raw Count and High Raw Count must be &gt; or = 0 and &lt; or = 2 raised to the power of the Total Length minus 1</p> <p>If "IBCD" then Total Length must be = 4, 8, 12, or 16</p> <p>If "IDIS" or "ITWOW" then Total Length must be = 16 or 32</p> <p>If "IMAG" or "ITWO" then Total Length must be &gt; or = 1 and &lt; or = 32</p> <p>If "IUND" then Total Length must be &gt; or = 1 and &lt; or = 64</p> <p>If "IUNS" then Total Length &gt; or = 1 and &lt; or = 32</p> <p>If "FEEE", "FIBM" or "FVAX" then Total Length must be = 32 or 64</p> <p>If "FMIL" or "FSPL" then Total Length must be = 32 or 48</p> <p>If "FNTL", "TGMT", "TTSM" or "TTWO" then Total Length must be = 32</p> <p>If "TECI", "TECS", "TGPC", "TUDS", or "TOOI" then Total Length must be = 48</p> <p>If "TEHS" the Total Length must be = 56</p> <p>If "TDMS" or "TERT" then Total Length must be = 64</p>		

**TABLE B-1 SPECIAL FUNCTION DEFINITION**  
**(\*\* DENOTES A CHECK BOX FIELD)**

Data Field	Validation	Decision Logic	Default Value
	If "TISS" then Total Length must be = 40 If "SEXP" the Total Length must be > or = 1 and < or = 640		
Calibration Type	If SC then Data Type must be IDIS If PC then valid Data Type values are "IMAG", "IUNS", "ITWO", "ITWOW", "IBCD", "IDSI", "FEEE", "FIBM", "FMIL", "FNTL", "FSPL", and "FVAX" If PP then Data Type values are "IMAG", "IUNS", "ITWO", "ITWOW", "IBCD", and "IDSI" If N then Data Type may be any valid entry in MSFC-STD-1274B, except for "IDIS" If PC, PP or SC then Calibration Default Set Number must not be Null If N then Calibration Default Set Number must be Null		N
Low Raw Counts	If Null then High Raw Count must be Null Low Raw Count < High Raw Count		Null
High Raw Counts	If Null then Low Raw Count must be Null		Null
Calibration Switching***		If checked then Next HOSC/POIC Main Telemetry Decision	
Expected State***		If checked then Next HOSC/POIC Main Telemetry Decision	
Limit Sensing***		If checked then Next HOSC/POIC Main Telemetry Decision	
Limit Switching***		If checked then Next HOSC/POIC Main Telemetry Decision	
Proprietary***		If checked then Next HOSC/POIC Main Telemetry Decision	

**TABLE B-1 SPECIAL FUNCTION DEFINITION**  
**(\*\*\* DENOTES A CHECK BOX FIELD)**

Data Field	Validation	Decision Logic	Default Value
Counter Parameter			
<b>TABLE A-3</b>		If Previous then HOSC/POIC Main Telemetry Decision If Calibration Switching checked in Table A-2 then A-6; otherwise HOSC/POIC Main Telemetry Decision	
Point Pair Default Set Number			
Calibration Set Number	Raw Count must not be = to another Raw Count		1
Sequence Number			1
Engineering Units			
Pair Count	Value must not be Null		
Pair Value	Value must not be Null		
<b>TABLE A-4</b>		If Previous then HOSC/POIC Main Telemetry Decision If Calibration Switching checked in tableA-2 then A-6; otherwise HOSC/POIC Main Telemetry Decision	
Polynomial Default Set Number			
Calibration Set Number			1
Engineering Units			
Low Range	Value must not be Null High Range must be > Low Range		
High Range	Value must not be Null High Range must be > Low Range		
Degree	Degree must be = the number of not Null Coefficient values minus one		
Coefficient 0	Value must not be Null		
Coefficient 1	Value must not be Null		

**TABLE B-1 SPECIAL FUNCTION DEFINITION**  
**(\*\*\* DENOTES A CHECK BOX FIELD)**

Data Field	Validation	Decision Logic	Default Value
Coefficient 2			
Coefficient 3			
Coefficient 4			
Coefficient 5			
Coefficient 6			
Coefficient 7			
Coefficient 8			
Coefficient 9		If Calibration Switching checked in Table A-2 then A-6; otherwise HOSC/POIC Main Telemetry Decision	
<b>TABLE A-5</b>		If Previous then HOSC/POIC Main Telemetry Decision If Calibration Switching checked in Table A-2 then A-6; otherwise HOSC/POIC Main Telemetry Decision	
Default Set Number			
Calibration Set Number	Maximum number of state codes is 32 Only one state code may be blank There must be at least two entries per Set Number Two State Code values must not be equal		1
Sequence Number			
Low Raw Count	Value must not be Null Low Count must be < or = High Count		
High Raw Count	Value must not be Null		
State Code	Value must not be Null		
Expected State***			

**TABLE B-1 SPECIAL FUNCTION DEFINITION**  
**(\*\*\* DENOTES A CHECK BOX FIELD)**

Data Field	Validation	Decision Logic	Default Value
<b>TABLE A-6</b>		If Next then HOSC/POIC Main Telemetry Decision	
Calibration Switched Primitive PUI	All characters must be uppercase with no embedded blanks If not Null then Calibration Type must be PC, PP, SC If not Null then Calibration Default Set Number must not be Null		
Calibration Set Number			1
Low Range			
High Range			
State Code			
<b>HOSC/POIC Main Telemetry Decision</b>		If Previous then A-2 If Next the Telemetry Measurement or Packet Decision	
<b>TABLE A-7</b>		If Previous then HOSC/POIC Main Telemetry Decision If Next then HOSC/POIC Main Telemetry Decision	
Samples Used			
Expected State	Value must not be Null		
Number of Violations			
Exception Monitored Message Description			
<b>TABLE A-8</b>		If Previous then HOSC/POIC Main Telemetry Decision If Next then Table A-9	
Default Set Number			
Limit Set Number			1
Number of Violations			
Samples Used			

**TABLE B-1 SPECIAL FUNCTION DEFINITION**  
**(\*\*\* DENOTES A CHECK BOX FIELD)**

Data Field	Validation	Decision Logic	Default Value
Low Caution	If Null then High Caution Low Warning a H For limits that are not Null, the Low Caution must Be < High Caution and High Warning		
High Caution	If Null then Low Caution or Low Warning or High Warning must not be Null For limits that are not Null, the High Caution must be < the High Warning		
Low Warning	If Null then Low Caution or High Caution or High Warning must not be Null For limits that are not Null, the Low Warning must be < the Low Caution, High Caution and High Warning		
High Warning	If Null the Low Caution or High Caution or Low Warning must not be Null For limits that are not Null, High Caution must be < High Warning		
Delta			
Exception Monitored Message Description			
<b>TABLE A-9</b>		If Previous then Table A-8 If Next then HOSC/POIC Main Telemetry Decision	
Limit Switched Primitive PUI	If not Null then Data Type must not be "IDIS"		
Limit Set Number			1
Low Range	If not Null then State Code must be Null If not Null then High Range must not be Null If Low Range and High Range are not Null then High Range must be > Low Range		
High Range	If not Null then State Code must be Null If not Null then Low Range must not be Null If Low Range and High Range are not Null then High Range must be > Low Range		



**TABLE B-1 SPECIAL FUNCTION DEFINITION**  
**(\*\*\* DENOTES A CHECK BOX FIELD)**

<b>Data Field</b>	<b>Validation</b>	<b>Decision Logic</b>	<b>Default Value</b>
State Code	If not Null then Low Range and High Range must be Null	If Next then HOSC/POIC Main Telemetry Decision If Calibrating Switching checked in Table A-2 then A-6; otherwise HOSC/POIC Main Telemetry Decision	
<b>Ground Routed and Processed TLM Packet Definition Decision</b>		If Next then A-13	
<b>TABLE A-10</b>		If POIC Processed Packet is checked in Table A-10 then A-13; otherwise Ground Routed and Processed Telemetry Packet Definition Decision	
Packet Correlation Number			
Packet Name/Telemetry ID			
APID			
Time ID			
Packet Type			
Version ID			
Packet Length			
Packet Rate/Update Cycle			
Units			
Update Rate			
POIC Processed Packet***			
<b>TABLE A-11</b>		If POIC Processed Packet is checked in Table A-12 then Table A-13; otherwise Ground Routed and Processed Telemetry Packet Definition Decision	
Packet Correlation Number			

**TABLE B-1 SPECIAL FUNCTION DEFINITION**  
**(\*\*\* DENOTES A CHECK BOX FIELD)**

<b>Data Field</b>	<b>Validation</b>	<b>Decision Logic</b>	<b>Default Value</b>
Packet Name/Telemetry ID			
APID			
Time ID			
Packet Type			
Version ID			
Packet Length			
Packet Rate/Update Cycle			
Units			
Separation			
POIC Processed Packet***			
<b>TABLE A-12</b>		If POIC Processed Packet is checked in Table A-12 then Table A-13; otherwise Ground Routed and Processed Telemetry Packet Definition Decision	
Packet Correlation Number			
Packet Name/Telemetry ID			
APID			
Time ID			
Packet Type			
Version ID			
Packet Length			
Packet Rate/Update Cycle			
Units			
Separation			
POIC Processed Packet***			

**TABLE B-1 SPECIAL FUNCTION DEFINITION**  
**(\*\*\* DENOTES A CHECK BOX FIELD)**

Data Field	Validation	Decision Logic	Default Value
<b>TABLE A-13</b>		If Previous then Telemetry Measurement or Packet Decision If packet subset present checked then A-14; otherwise A-17	
Packet Number			
Packet Name/Telemetry ID	Must be alphanumeric. All letters in the value must be uppercase with no embedded blanks		
ISS Issued APID			
Packet Time Tag Primitive PUI			
Format Code Primitive PUI			
Packet Format Code			
Packet Length	Must not be Null		
Packet Rate/Update Cycle			
Packet Data Cycle	Must not be Null		
Packet Subset Present?***		If checked the Next A-14 Else next A-17	
<b>TABLE A-14</b>		If Previous then A-13 If subset sample is Counter or Range in A-14 then Subset Format Decision; otherwise A-17	
Encapsulated Stream ID APID			
Encapsulated Packet Format Code			
Payload Defined Subset ID			
Subset ID Primitive PUI			
Subset Multiple Formats***		If checked then Subset Format Decision	
Subset Format			
Subset Format Code Primitive			

**TABLE B-1 SPECIAL FUNCTION DEFINITION**  
**(\*\*\* DENOTES A CHECK BOX FIELD)**

<b>Data Field</b>	<b>Validation</b>	<b>Decision Logic</b>	<b>Default Value</b>
Subset Sample Composition	Must not be Null Default Value = N If N, C, or R then Sample Rate must be 1.0 If N, C, or R then Data Cycle must not be Null If D then Sample Rate must be Null If D then Data Cycle must be Null If D then Start octet must be Null If S then Sample Rate must be > 1.0 If S then Offset must not be Null If N, S, C or R then Start Octet must be Null If N, C, R or D then Offset must be Null If N, S, R or D then Counter Signal ID must be Null If C then Counter Signal ID must be Null If N, S, C or D then Range Signal ID must be Null If R then Range Signal ID must not be Null		N
Subset Rate			Null
Subset Data Cycle			Null
Start Word			
Word Offset			Null
Subset Length	Must not be Null		
<b>Sample Composition Decision</b>		If Previous then A-14 If Next then A-17	
<b>TABLE A-15</b>		If Next then Subset Format Decision	
Payload Defined Subset ID			
Range Signal ID	All characters must be uppercase with no embedded blanks If not Null then Counter Signal ID must be Null If not Null then Low Range or High Range or State Code must not be Null		

**TABLE B-1 SPECIAL FUNCTION DEFINITION**  
**(\*\*\* DENOTES A CHECK BOX FIELD)**

Data Field	Validation	Decision Logic	Default Value
	If Null then Low Range, High Range, State Code must be Null If not Null and Data Type is "IDIS" then State Code must not be Null If not Null and Data Type is "IDIS" then Low Range and High Range must be Null If not Null and Data Type is not "IDIS" then State Code must be Null If not Null and Data Type is not "IDIS" then Low Range and High Range must not be Null		
Range Low	If not Null then State Code must be Null If Low range and High Range is not Null then High Range must be > than Low Range		
Range High	If not Null the State Code must be Null If Low Range and High Range is not Null then High Range must be > than Low Range If Low Range and High Range or State Code is not Null then Counter Start Value and Counter Offset must be Null		
Range State Code	If not Null then Low range and High Range must be Null		
<b>TABLE A-16</b>		If Next then Subset Format Decision	
Payload Defined Subset ID			
Counter Signal ID	All characters must be uppercase with no embedded blanks If not Null then Range Signal ID must be Null If not Null then Counter Start Value and Counter Offset must not be Null If Null then Counter Start Value and Counter Offset must be Null		
Counter Start Value	If not Null then Low Range, High Range and State Code must be Null If not Null then Counter Offset must not be Null		Null

**TABLE B-1 SPECIAL FUNCTION DEFINITION**  
**(\*\*\* DENOTES A CHECK BOX FIELD)**

Data Field	Validation	Decision Logic	Default Value
Counter Offset	If not Null then Low Range, High Range and State Code must be Null		Null
<b>TABLE A-17</b>		If Previous then A-13 If Subset Sample is Counter or Range in A-17 then Sample Composition Decision; otherwise Telemetry Measurement or Packet Decision	
Parameter Correlation Number			
Parameter/Technical Name			
Subset ID			
Subset Format			
Parameter Composition			T
Sample Composition	If N, C, or R then Sample Rate must be 1.0 If N, C, or R then Offset must be Null If S then Sample Rate must be > 1.0 If S then Offset must not be Null If C then Counter Signal ID, Counter Start Value, And counter Offset must not be Null If C then Range Signal ID, Low Range, High Range and State Code must be Null If R then Range Signal ID, Low Range and High Range values or Range Signal ID and State Code must not be Null If R then Counter Signal ID, Counter Start Value And Counter Offset must be Null If N or S then Counter Signal ID, Range Signal ID, Counter Start Value, Counter Offset, Low Range, High Range and State Code Must be Null		N
Rate			
Sampling Offset			Null
Start Word			

**TABLE B-1 SPECIAL FUNCTION DEFINITION**  
**(\*\*\* DENOTES A CHECK BOX FIELD)**

Data Field	Validation	Decision Logic	Default Value
Bit Offset			
Data Length	Must not be Null		
<b>Sample Composition Decision</b>		If Previous then A-17 If Next then Telemetry Measurement or Packet Decision	
<b>TABLE A-18</b>		If Next then Sample Composition Decision	
Range Low	If not Null then High Range must not be Null If Low Range and High Range or State Code is not Null then Counter Start Value and Counter Offset must be Null		
Range High	If not Null then Low Range must not be Null		
Range State Code	If Low Range and High Range or State Code is not Null then Counter Start Value and Counter Offset must be Null		
Range Signal ID	All characters must be uppercase with no embedded blanks		
<b>TABLE A-19</b>		If Next then Sample Composition Decision	
Counter Start Value			Null
Counter Offset			Null
Counter Signal ID	All characters must be uppercase with no embedded blanks		
Initial Value	Value must not be Null		
End Value	Value must not be Null		
Wrap Around			W
Direction	If + then End Value must be > Initial Value If - then Initial Value must be > End Value		+
Delta			1
Counter Type			N

**TABLE B-1 SPECIAL FUNCTION DEFINITION**  
**(\*\*\* DENOTES A CHECK BOX FIELD)**

Data Field	Validation	Decision Logic	Default Value
<b>TABLE A-20</b>		If Previous then Telemetry Measurement or Packet Decision If Answer is Yes Next then A-21; otherwise A-2.	
Health and Status Transmit Rate			
Health and Status Packet Length (in words)			
Health and Status Group PUI			
Does this Payload require any service of the PLMDM? (i.e. Limit Check Service, Exception Monitor, Timeliner Viewed, PCS Displayed)		If Yes then Table A-20  If No then Table A-20  If Next then Table A-21	
<b>TABLE A-21</b>		If Previous then Table A-20 If Next then Table A-22	
PLMDM Limit Check Service? ***		If checked then Next Screen A-22	
Timeliner Service?***		If checked then Next Screen A-22	
PCS Displayed?***		If checked then Next Screen A-22	
PCS Limit Check Service?***		If checked then Next Screen A-22	
PCS Calibration  Polynomial Calibration Linear Calibration		If checked then Next Screen A-22	
Ancillary Data?***		If checked then Next Screen A-22	
<b>TABLE A-22</b>		If Previous then Screen A-21 If Next the Health and Status Parameter Definition Decision	



**TABLE B-1 SPECIAL FUNCTION DEFINITION**  
**(\*\*\* DENOTES A CHECK BOX FIELD)**

<b>Data Field</b>	<b>Validation</b>	<b>Decision Logic</b>	<b>Default Value</b>
Word Number			
Bit Offset			
Data Length	Must not be Null		
Data Type	Must not be Null Value must be uppercase		
<b>Health and Status Parameter Definition Decision</b>		If Previous then A-22	
<b>TABLE A-23</b>		If Next then Health and Status Parameter Definition Decision	
Parameter Correlation Number			
Parameter/Technical Name			
Data Type			
Method (Error)			
Annunciation (Error Type)			
Value			
Trip Count			
Command CCN (for the command to be sent)			
<b>TABLE A-24</b>		If Next then Health and Status Parameter Definition Decision	
Engineering Units			
Min. Value (Eng. Units)			
Max. Value (Eng. Units)			
Degree			
Coefficient 0			
Coefficient 1			
Coefficient 2			
Coefficient 3			
Coefficient 4			

**TABLE B-1 SPECIAL FUNCTION DEFINITION**  
**(\*\*\* DENOTES A CHECK BOX FIELD)**

<b>Data Field</b>	<b>Validation</b>	<b>Decision Logic</b>	<b>Default Value</b>
Coefficient 5			
<b>TABLE A-25</b>		If Next then Health and Status Parameter Definition Decision	
Primitive PUI			
Engineering Units			
Min. Value (Eng. Units)			
Max. Value (Eng. Units)			
Number of Segments (Max 30)			
Segment Number			
Segment A0			
Segment A1			
<b>TABLE A-26</b>		If Next then Health and Status Parameter Definition Decision	
Data Type			
Engineering Units			
Number of Limit Sets (Max 3)			
Lower Limit Set 1			
Upper Limit Set 1			
Lower Limit Set 2			
Upper Limit Set 2			
Lower Limit Set 3			
Upper Limit Set 3			
<b>TABLE A-27</b>		If Previous then Main Decision Menu If Next then Command Decision	
Command Correlation Number			
Command Mnemonic			
Command Name			
Command Description			

**TABLE B-1 SPECIAL FUNCTION DEFINITION**  
**(\*\*\* DENOTES A CHECK BOX FIELD)**

Data Field	Validation	Decision Logic	Default Value
Command PUI			
PLMDM Initiated***	If checked then command is allowed to be displayed on Table A-28 Else it cannot.	If checked then Command Decision	
PCS Initiated***	If checked then command can be displayed on Table A-27 Else it cannot.	If checked then Command Decision	
Timeliner Initiated***		If checked then Command Decision	
POIC Initiated***	If checked then command can be displayed on Table A-29 Else it cannot.	If checked then Command Decision	
MPLM Required***		If checked then Command Decision	
Remote Initiated		If checked then Command Decision	
<b>Command Decision</b>		If Previous then Main decision Menu	
<b>TABLE A-29</b>		If previous then Command Decision If Next then A-30	
Command Type	Value must not be Null		
Startup***		If checked then Table A-29	
Standby***		If checked then Table A-29	
Shutdown***		If checked then Table A-29	
Telemetry Initiated Command***		If checked then Table A-29	
Payload MDM Command Review	This screen is used by PSIV to verify command that have been defined as PLMDM commands.	If Previous then Table A-31 If Next then Table A-31	
Command Word			
Command Value			
Input Data Type			
<b>TABLE A-30</b>		If Previous then Command Decision If Next then Table A-31	

**TABLE B-1 SPECIAL FUNCTION DEFINITION**  
**(\*\*\* DENOTES A CHECK BOX FIELD)**

Data Field	Validation	Decision Logic	Default Value
Time Constraint			
Verification Delay			
Telemetry Verification***		If checked then Next Table A-31	
Length	Must not be Null unless variable length has been checked. The Length, Start Word and and Start Bit values for all command fields with the same command mnemonic must be defined such that the fields do not overlap and there are no gaps between fields.		
Variable Length***	<p>If checked then Length must be null.</p> <p>If checked then Input Data Type must be "H" and Uplink Data Type must be "IUNS".</p> <p>If not checked then Length must be consistent with the valid lengths defined in Appendix I for the Uplink Data Type value.</p> <p>If checked, only one command field can be variable in length and then the command field must be the last field in the command, or it must be the next-to-last field in the command and the last field of the command must be a checksum field (Uplink Data Type = ICHK) with no defined Start Word and Start Bit values.</p>	If checked then Next Screen A-32	
Critical***		If checked then Next A-32	
Hazard***	If the hazardous value is 'Y', then initial state value must be 'D' and command type value must be 'P'	If checked then Next A-32	
Legal Station Mode			
<b>TABLE A-31</b>		If Previous then A-30 If Next then A-32	
Verification Telemetry PCN			
Verification Telemetry PUI			
Verification State Code	If Null then Range Low or Range High must not be Null. Otherwise Range Low and Range High must be Null.		
Verification Range Low	If Range Low and Range High are Null then State Code must not be Null. Otherwise, State Code must be Null.		

**TABLE B-1 SPECIAL FUNCTION DEFINITION**  
**(\*\*\* DENOTES A CHECK BOX FIELD)**

Data Field	Validation	Decision Logic	Default Value
	Range Low must be < or = Range High		
Verification Range High	If Range Low and Range High are Null then State Code must not be Null. Otherwise, State Code must be Null.		
<b>TABLE A-32</b>		If Previous then A-30 If Next then Payload MDM Command Definition #2 PSIV	
Field Mnemonic	All letters in the value must be uppercase with no embedded blanks		
Field Description			
Start Word	Value must not be Null  The Length, Start Word and Start Bit values for all command fields with the same command mnemonic must be defined such that the fields do not overlap and there are no gaps between fields		
Start Bit	Value must not be Null  The Length, Start Word and Start Bit values for all command fields with the same command mnemonic must be defined such that the fields do not overlap and there are no gaps between fields		
Field Length	Must not be Null  The Length, Start Word and Start Bit values for all command fields with the same command mnemonic must be defined such that the fields do not overlap and there are no gaps between fields		
Variable Field Length***	If checked, then Field Length must be Null  If checked then Input Data Type must be "H" and Uplink Data Type must be "INUS"  If not checked then Length must be consistent with the valid lengths defined in Appendix I for the Uplink Data Type value.	If checked then Next Command Decision	
Input Data Type	If Input Data Type "A" then Uplink Data Type may be "IDIS" or "IUNS" or "SASC" or "SASCB" or "SEBC"		

**TABLE B-1 SPECIAL FUNCTION DEFINITION**  
**(\*\*\* DENOTES A CHECK BOX FIELD)**

Data Field	Validation	Decision Logic	Default Value
	<p>If Input Data Type "B" then Uplink Data Type may be "IDIS" or "IPAR" or "IUNS"</p> <p>If Input Data Type "D" then Uplink Data Type may be "FEEE" or "FIBM" or "IBCD" or "IDSI" or "IMAG" or "ITWO" or "IUNS"</p> <p>If Input Data Type "G" then Uplink Data Type may be "FEEE" or "FIBM"</p> <p>If Input Data Type "H" then Uplink Data Type may be "IUNS"</p> <p>If Input Data Type "O" then Uplink Data Type may be "IUNS"</p> <p>If Null then Uplink Data Type must be "ICLK"</p> <p>If Null then Field Type must be "P"</p> <p>If "A" then Calibration Type must be "N", Uplink Data Type must be "SASC", "SEBC" or "SASCB"</p> <p>If "A" or Null then Range Low and Range High must be Null</p>		
Uplink Data Type	<p>Value must not be Null</p> <p>If "IPAR" then Field Type must be "P"</p> <p>If "ICLK" then the command field must be the last field in the command</p> <p>If "SASCB" then Length must be even</p> <p>If Input Data Type "A" then Uplink Data Type may be "IDIS" or "IUNS" or "SASC" or "SASCB" or "SEBC"</p> <p>If Input Data Type "B" then Uplink Data Type may be "IDIS" or "IPAR" or "IUNS"</p> <p>If Data Type "D" then Uplink Data Type may be "FEEE" or "FIBM" or "IBCD" or "IDSI" or "IMAG" or "ITWO" or "IUNS"</p> <p>If Input Data Type "G" then Uplink Data Type may be "FEEE" or "FIBM"</p> <p>If Input Data Type "H" then Uplink Data Type may be "IUNS"</p>		

**TABLE B-1 SPECIAL FUNCTION DEFINITION**  
**(\*\*\* DENOTES A CHECK BOX FIELD)**

Data Field	Validation	Decision Logic	Default Value
	If Input Data Type "O" then Uplink Data Type may be "IUNS" If Null then Uplink Data Type must be "ICHK"		
<u>Field Type</u> Predefined or Modifiable	Value must not be Null		P
Data	Value must not be Null if Field Type is predefined		
Engineering Units	Engineering Units must be a valid value as defined in Appendix D of MSFC-DOC-1949C		
Range Low	Range Low must be consistent with the defined Input Data Type Range Low must be < or = Range High		
Range High	Range High must be consistent with the defined Input Data Type		
Calibration Type	Value must not be Null If "PC" or "PP" then Input Data Type must be "D" or "G" If "PC", "PP", or "SC" then Calibration Default Set Number must not be Null If "SC" then Input Data Type must be "A" and the Uplink Data Type must be "IDIS" or "IUNS"		N
Calibration Switching***	If checked then this command requires data entry on Table A-35		
Tolerance			
<b>Payload MDM Command Definition 2 PSIV</b>		If Previous then A-28 If Next then Command Decision	
<b>Command Calibration Decision</b>		If Previous then A-32	
<b>TABLE A-33</b>		If Previous then Command Calibration Decision If Calibration Switching was checked in Table A-32 then Next A-36; otherwise Command Calibration Decision	

**TABLE B-1 SPECIAL FUNCTION DEFINITION**  
**(\*\*\* DENOTES A CHECK BOX FIELD)**

Data Field	Validation	Decision Logic	Default Value
Default Set Number			
Set Number	There must be at least two point pairs defined for each calibration set		
Pair Count	The Pair Count and Pair Values for a given calibration set must be defined such that the graph described by the point pairs of the calibration set is continuously increasing or decreasing		
Pair Value	Value must not be null. The pair count and pair values for a given calibration set must be defined such that the graph described by the point pairs of the calibration set is continuously increasing or decreasing		
<b>TABLE A-34</b>		If Previous then Calibration Decision If Calibration switching was checked in Table A-32 then next A-36; otherwise Command Calibration Decision	
Default Set Number			
Set Number			
State Code	All letters in the value must be uppercase		
Counts	Value must not be Null		
<b>TABLE A-35</b>		If Previous then Command Calibration Decision If Calibration switching was checked in Table A-32 then next A-36; otherwise Command Calibration Decision	
Default Set Number			
Calibration Set Number			
Low Counts			
High Counts			
Degree	Value must not be Null		



**TABLE B-1 SPECIAL FUNCTION DEFINITION**  
 (\*\* DENOTES A CHECK BOX FIELD)

Data Field	Validation	Decision Logic	Default Value
Coefficient 0	Value must not be Null		
Coefficient 1	Value must not be Null		
Coefficient 2	Value must be 0 or Null if Degree is less than 2		
Coefficient 3	Value must be 0 or Null if Degree is less than 3		
Coefficient 4	Value must be 0 or Null if Degree is less than 4		
Coefficient 5	Value must be 0 or Null if Degree is less than 5		
<b>TABLE A-36</b>		If Next then Command Calibration Decision	
Calibration Set Number			
Switch Field Mnemonic	Value must not be Null Value must not be the same as Field Mnemonic Value		
Low Range	Value must not be Null Low Range must be < or = High Range		
High Range	Value must not be Null		
State Code	All letters in the value must be uppercase		
<b>Other Services Decision</b>		If Next then Main Decision Menu	
<b>TABLE A-37 Pop-Up</b>		If Next then A-37	
Using Broadcast Ancillary Data? Yes or No			
Using Broadcast Time? Yes or No		If Next then Other Services Decision	
<b>TABLE A-37</b>		If Previous then Screen A-37 Pop-up If Next then Other Services Decision	
Data Set Number			
Transmit Rate			

**TABLE B-1 SPECIAL FUNCTION DEFINITION**  
**(\*\*\* DENOTES A CHECK BOX FIELD)**

Data Field	Validation	Decision Logic	Default Value
<b>TABLE A-38</b>		If Previous then Screen A-37 If Next then Other Services Decision	
Parameter/Technical Name	Must not be Null.		
Group PUI			
Word PUI			
Primitive PUI			
Bit Offset			
Parameter Description			
<b>TABLE A-39</b>		If Next then Other Services Decision	
File Name			
Bundle File Name			
File ID Number			
File Size (words)			
File Description			
File Access Authorization			
A.    Read***			
B.    Write***			
<b>TABLE A-40</b>		If Next then Other Services Decision	
Bundle Name			
Bundle ID Number			
Bundle Request Authorization Code			
Install Bundle			
Halt Bundle			
Remove Bundle			
Start Sequence			

**TABLE B-1 SPECIAL FUNCTION DEFINITION**  
**(\*\*\* DENOTES A CHECK BOX FIELD)**

<b>Data Field</b>	<b>Validation</b>	<b>Decision Logic</b>	<b>Default Value</b>
Stop Sequence Resume Sequence			
Sequence Name			
Sequence Identification Number			
<b>TABLE A-41</b>		If Next then Other Services Decision	
Display Name			
Display Description			
Display Number			
Parameter Correlation #			
Parameter PUI			
Command Coordination Number			
Command PUI			
<b>TABLE A-42</b>		If Next then Other Services Decision	
Video Uplink			
Rate (mbps)			
Duration (sec)			
Video Downlink via HRDL			
Rate (mbps)			
Duration (sec)			
Video Dowlink via ISS Video Baseband Signal Processor			
Resolution			
Frame Rate			
Duration (sec)			
<b>TABLE A-43</b>		If Next then Chosen Selection	
Check Mark		If checked then to chosen selection	

**TABLE B-1 SPECIAL FUNCTION DEFINITION**  
 (\*\* DENOTES A CHECK BOX FIELD)

Data Field	Validation	Decision Logic	Default Value
Unfinished Screens			
<b>Customer Contact, General Information or Payload Description</b>		If Previous then Main Decision Menu	
<b>TABLE A-44</b>		If Next then Customer Contact, General Information or Payload Description	
First Name			
Middle Name			
Last Name			
Title			
Organization			
Street 1			
Street 2			
City			
State/Province			
Country			
Zip/Postal Code			
Other			
Internal Mail Code			
Phone Number			
Fax Number			
Page Number			
Email Address			
WWW Page Address			
<b>TABLE A-45</b>		If Next then Customer Contact, General Information or Payload Description	
General Information			

**TABLE B-1 SPECIAL FUNCTION DEFINITION**  
**(\*\*\* DENOTES A CHECK BOX FIELD)**

<b>Data Field</b>	<b>Validation</b>	<b>Decision Logic</b>	<b>Default Value</b>
<b>TABLE A-46</b>		If Next then Customer Contact, General Information or Payload Description	
Payload Description			

LOGON SCREEN

Log-On Screen

User ID

Password

Exit

Logon

**A-ii Payload Selection**

Select a Payload Rack, if a Payload Rack has not been assigned, Select option "none". Select a Flight for the Payload Rack selected, if a Flight has not been assigned, Select option "none". Select a Sub-Rack Payload, Select option "All" to view all Sub-Rack Payloads for the selected Payload Rack and Flight in a Rolled-up configuration.

Payload Rack:

Flight Effectivity:

Data Set Development Level:

Sub-Rack Payload:

**A-iii Payload Data**

Please Enter the following Information pertaining to your Payload. Press "SAVE" to save the new entries. Press "NEXT" to navigate to the next screen.

Payload Name	Payload Acronym	Payload ID
<input type="text"/>	<input type="text"/>	<input type="text"/>

Payload Sub-			
Payload Sub-Element Title	Element Acronym	Subset ID	Payload Index
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Rack Assignment	Flight Effectivity	Rack Location	LDP
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Payload Type/Element	Functional System	Generic Device Code	Group Assembly
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>



**A-iii Payload Data**

	Remote Terminal	LAN-1 Gateway Destination	LAN-2 Gateway Destination
Address	<input type="text"/>	<input type="text"/>	<input type="text"/>
Buffer Size	<input type="text"/>	<input type="text"/>	<input type="text"/>
Max Acceptable Latency	<input type="text"/>	<input type="text"/>	<input type="text"/>

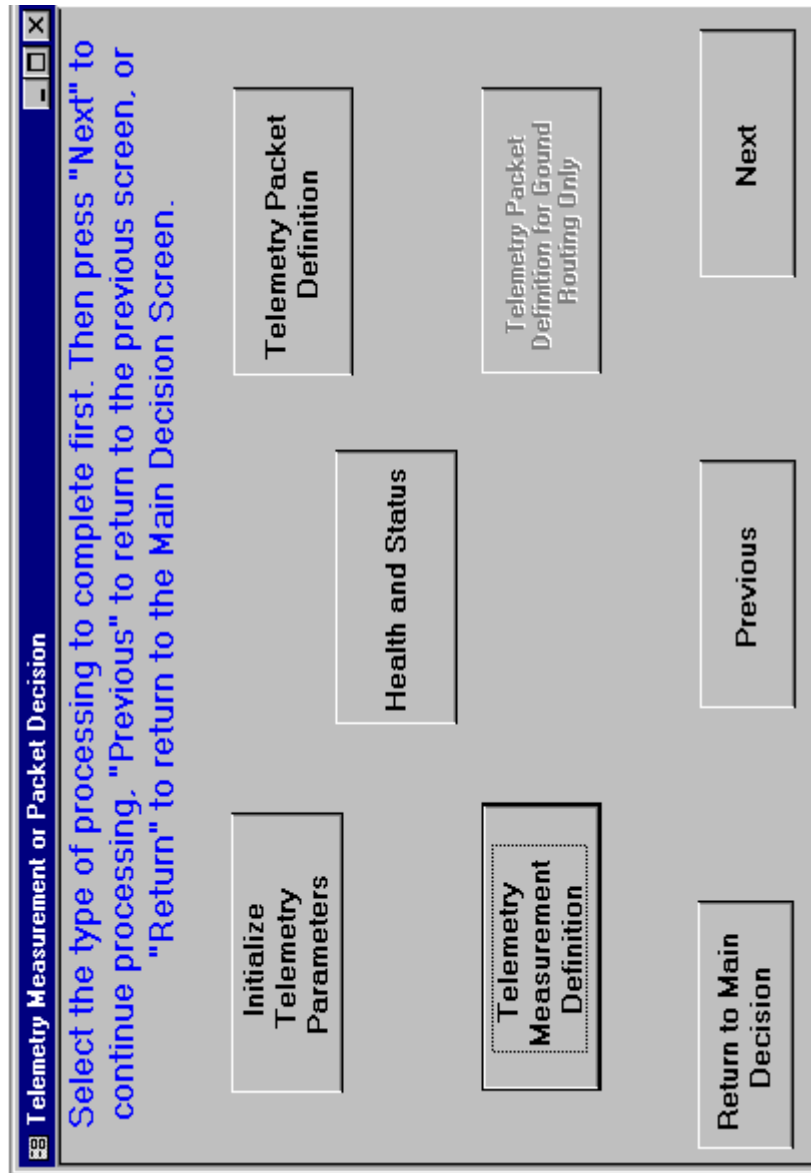
  

	LAN-1 Gateway Source	LAN-2 Gateway Source	LAN-1 Rack to Rack Source	LAN-2 Rack to Rack Source
Address	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
Buffer Size	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

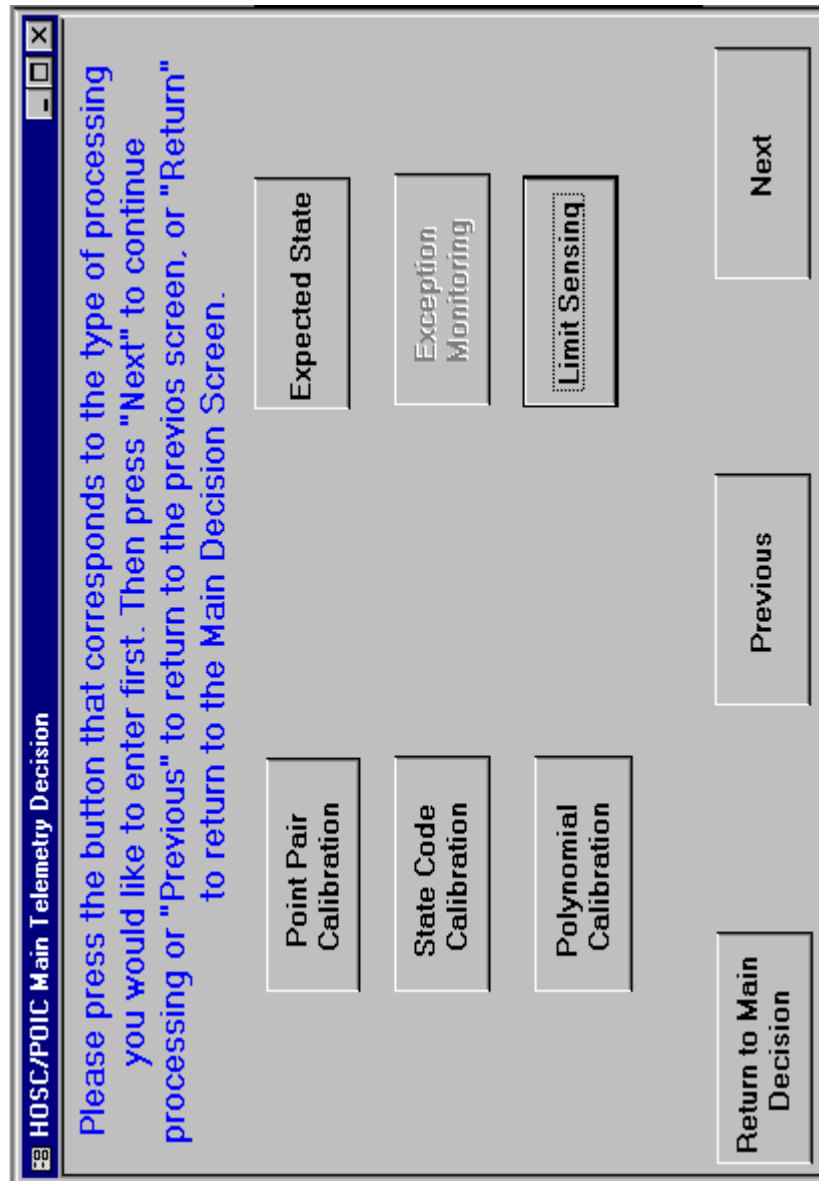
	LAN-1 Rack to Rack Destination	LAN-2 Rack to Rack Destination
Address	<input type="text"/>	<input type="text"/>
Max Acceptable Latency	<input type="text"/>	<input type="text"/>

Internet Protocol Address Range



[illegible]

[illegible]



**A-3 HOSC/POIC Telemetry Point Pair Definition**

Please Enter the following data that corresponds to the following Parameter Correlation Numbers and Names. Then press "Next" to continue processing or "Previous" to return to the previous screen.

Parameter Correlation Number	Parameter/Technical Name	Primitive PUI
<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>

Default Set Number	Set Number	Sequence Number	Engineering Units	Pair Count	Pair Value
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

**A-4 HOSC/POIC Telemetry Polynomial Definition**

Please Enter the following data that corresponds to the following Parameter Correlation Numbers and Names. Then press "Next" to continue processing or "Previous" to return to the previous screen.

Parameter Correlation Number	Parameter/Technical Name	Primitive PUI
<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>

Default Set Number	Set Number	Engineering Units	Low Range	High Range	Degree
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Coefficient	Coefficient 1	Coefficient 2	Coefficient 3	Coefficient 4	Coefficient 5	Coefficient 6	Coefficient 7	Coefficient 8	Coefficient 9
0	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

**A-5 HOSC/POIC Telemetry State Code Definition**

Please Enter the following data that corresponds to the following Parameter Correlation Numbers and Names. Then press "Next" to continue processing or "Previous" to return to the previous screen.

Parameter Correlation Number	Parameter/Technical Name	Primitive PUI
<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>

Default Set Number	Set Number	Sequence Number	Low Count	High Count	State Code	Expected State
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="checkbox"/>
	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="checkbox"/>
	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="checkbox"/>
	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="checkbox"/>
	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="checkbox"/>
	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="checkbox"/>



**A-6 HOSC/POIC Telemetry Calibration Switching**

Please Enter the following data that corresponds to the following Parameter Correlation Numbers and Names. Then press "Next" to continue processing or "Previous" to return to the previous screen.

Parameter Correlation Number	Parameter/Technical Name	Primitive PUI	Calibration Switched Primitive PUI	Calibration Set Number	Low Range	High Range	OR	State Code
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

[illegible]

**A-8 HOSC/POIC Limit Sensing Definition**

Please Enter the following data that corresponds to the following Parameter Correlation Numbers and Names. Then press "Next" to continue processing or "Previous" to return to the previous screen.

Parameter Correlation Number	Parameter/ Technical Name	Primitive PUJ	Default Set Number

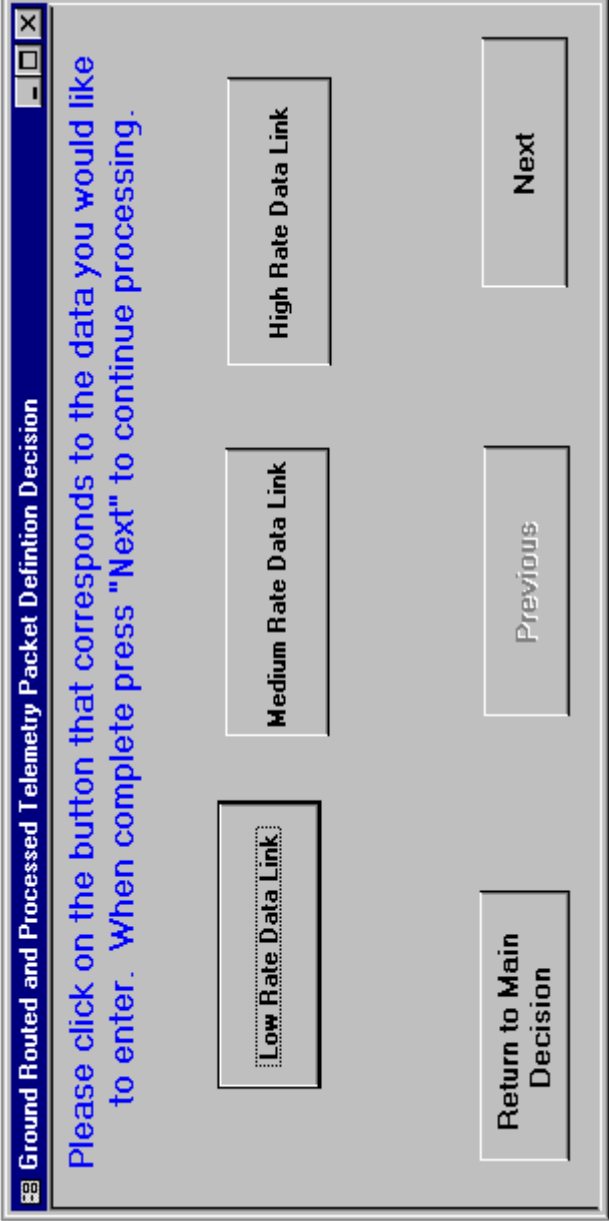
Limit Set Number	Number of Violation	Samples Used	Low Caution	High Caution	Low Warning	High Warning	Delta	Exception Monitored Message Description

Return to Main Decision      Previous      Next      SAVE

### A-9 HDSC/POIC Limit Switch Definition

Please Enter the following data that corresponds to the following Parameter Correlation Numbers and Names. Then press "Next" to continue processing or "Previous" to return to the previous screen.

Parameter Correlation Number	Parameter/ Technical Name	Primitive PUI	Limit Switched Primitive PUI	Limit Set Number	Low Range	High Range	OR	State Code
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>						



**Ground Routed and Processed Telemetry Packet Definition Decision**

Please click on the button that corresponds to the data you would like to enter. When complete press "Next" to continue processing.

Low Rate Data Link

Medium Rate Data Link

High Rate Data Link

Return to Main Decision

Previous

Next

[illegible]

Packet Correlation Number	Packet Name/ Telemetry ID	APID	Time ID	Packet Type	Version ID	Packet Length [words]	Packet Rate/ Update Cycle	Units Separation	PDIC Processed Packet?
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input checked="" type="checkbox"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input checked="" type="checkbox"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input checked="" type="checkbox"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input checked="" type="checkbox"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input checked="" type="checkbox"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input checked="" type="checkbox"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input checked="" type="checkbox"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input checked="" type="checkbox"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input checked="" type="checkbox"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input checked="" type="checkbox"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input checked="" type="checkbox"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input checked="" type="checkbox"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input checked="" type="checkbox"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input checked="" type="checkbox"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input checked="" type="checkbox"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input checked="" type="checkbox"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input checked="" type="checkbox"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input checked="" type="checkbox"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input checked="" type="checkbox"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input checked="" type="checkbox"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input checked="" type="checkbox"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input checked="" type="checkbox"/>

[illegible]



**A-13 Packet Definition**

Enter a Packet Number and Packet Name for each Packet that will be processed by the HOSC/POIC. Then enter the following data that corresponds to that Packet Name. Then press "Next" to continue processing or "Previous" to return to the previous screen.

Packet Number	Packet Name	ISS Issued APID	Packet Time Tag Primitive PUI	Format Code Primitive PUI	Packet Format code (Hex)	Packet Length (words)	Packet Rate/Update Cycle	Packet Data Cycle	Packet Subset Present?

Return to Main Decision      Previous      Next      SAVE

**A-14 Subset Format Definition**

Please enter the following data pertaining to Ground Telemetry Processing. Then press "Next" to continue, "Previous" to go back to the previous screen, or "Return" to return to the Main Decision Screen.

Payload Defined Subset ID	Subset ID Primitive PUI	Subset Multiple Formats	Subset Format	Subset Code Primitive	Subset Sample Composition	Subset Rate	Subset Data Cycle	Start Word	Word Offset	Subset Length	Encapsulated Packet	
											Packet Correlation Number	Packet Name/Telemetry ID
		<input type="checkbox"/>										
		<input type="checkbox"/>										
		<input type="checkbox"/>										
		<input type="checkbox"/>										
		<input type="checkbox"/>										



Payload Defined Subset ID	Range Signal ID	Range Low	Range High	OR	Range State Code

Return to Main Decision      Next      SAVE

**A-16 Subset Counter Sampling Definition**

Please Enter the following data that corresponds to the following Packet Number and Packet Name. Then press "Next" to continue processing or "Previous" to return to the previous screen.

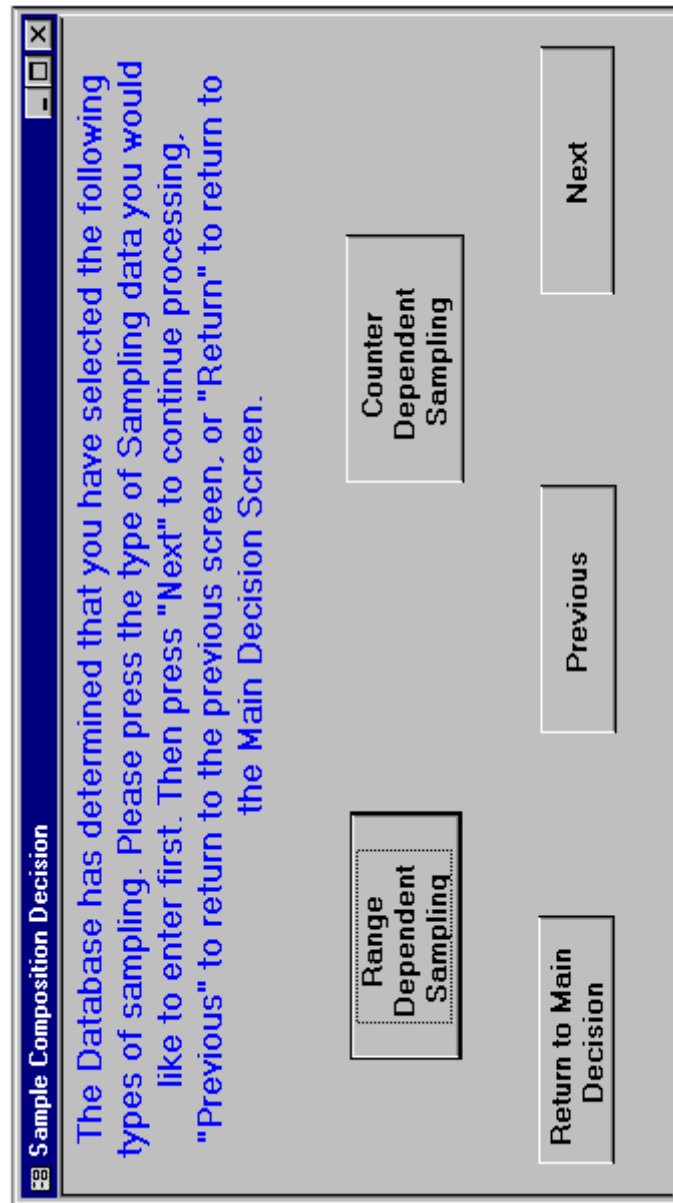
Packet Correlation Number	Parameter Name/ Technical Name	Payload Defined Subset ID	Counter Signal ID	Counter Start Value	Counter Offset
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

**A-17 Telemetry Packet Content Definition**

Please enter the following data pertaining to Ground Telemetry Processing. Then press "Next" to continue.  
"Previous" to go back to the previous screen, or "Return" to return to the Main Decision Screen.

Parameter Correlation Number	Parameter Name	Subset ID	Subset Format	Parameter Composition	Sample Composition	Rate	Sampling Offset	Start Word	Bit Offset	Data Length
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

<input type="button" value="Return to Main Decision"/>	<input type="button" value="Previous"/>	<input type="button" value="Next"/>	<input type="button" value="SAVE"/>
--	---	-------------------------------------	-------------------------------------



**A-18 Telemetry Packet Range Sample Definition**

Please Enter the following data that corresponds to each Parameter the following Packet Number and Packet Name. Then press "Next" to continue processing or "Previous" to return to the previous screen.

Parameter Correlation Number	Parameter/ Technical Name	Range Low	Range High	OR	Range State Code	Range Signal ID
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>		<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>		<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>		<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>		<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>		<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>		<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>		<input type="text"/>	<input type="text"/>

Packet Correlation Number	Packet Name/ Telemetry ID
<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>



**A-19 Telemetry Packet Counter Sample Definition**

Please Enter the following data that corresponds to the following Parameter Correlation Numbers and Names. Then press "Next" to continue processing or "Previous" to return to the previous screen.

Parameter Correlation Number	Parameter Name	Counter Start Value	Counter Offset	Counter Signal ID	Initial Value	End Value	Wrap Around	Direction	Delta	Counter Type

Packet Correlation Number:   
Packet Name/ Telemetry ID:

Return to Main Decision      Next      SAVE

**A-20 Health & Status Initialization**

Enter the required Health and Status information below.  
Press **NEXT** to navigate to the next data entry screen.

Health and Status Transmit Rate:

Health and Status Packet Length ( in Words):

Health and Status Group PUI:

Does this Payload require any Onboard services from the Payload MDM, including the Caution and Warning Summary Word? (ie. Limit Check Service, Exception Monitor, Timeliner Viewed, PCS Displayed)

☐ YES ☐ NO

**Return to Main Decision** **PREVIOUS** **NEXT** **SAVE**

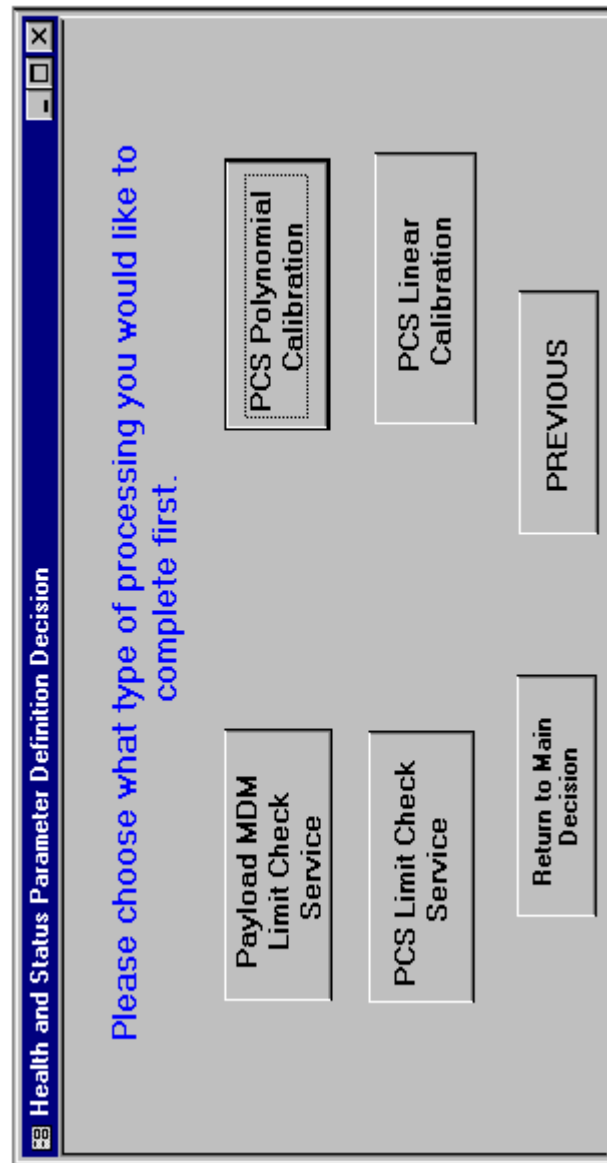
**A-21 Health and Status Service Requirements and Definitions**

Please enter a check in the box beside the Parameter Correlation Number and Parameter Name that corresponds to the type of processing required. Then press "Next" to continue processing. "Previous" to go back to the previous screen, and "Return" to return to the Main Decision Step.

Parameter Correlation Number	Parameter/Technical Name	Payload		PCS Limit Check Service?	Timeliner Service?	PCS Displayed?	PCS Calibration		Ancillary Data?
		MDM Limit Check Service?	Polynomial Calibration				Linear Calibration		
HRF0001		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Return to Main Decision      Previous      Next      SAVE

[illegible]



**A-23 Health and Status Payload MDM Limit Check Definition**

Please enter the following data pertaining to PL MDM Limit Check Service.  
Then press "Next" to continue, or "Return" to return to the Main Decision Screen.

Parameter Correlation Number	Parameter/ Technical Name	Data Type	Method (error)	Annunciation (Error Type)	Value	Trip Count	Command CN (for the Cmd to be sent)

Return to Main Decision
Next
SAVE

**A-24 Health and Status PCS Polynomial Calibration Definition**

Please enter the following data pertaining to PCS Polynomial Calibration. Then press "Next" to continue, or "Return" to return to the Main Decision Screen.

Parameter Correlation Number	Parameter/ Technical Name	Engineering Units	Min Value (Eng. Units)	Max Value (Eng. Units)	Degree	Coefficient 0	Coefficient 1	Coefficient 2	Coefficient 3	Coefficient 4
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/> </							

**A-25 Health and Status PCS Linear Calibration Definition**

Please enter the following data pertaining to PCS Linear Calibration Processing. Then press "Next" to continue, or "Return" to return to the Main Decision Screen.

Parameter Correlation Number	Parameter/ Technical Name	Primitive PUI	Engineering Units	Min Value (in Eng. Units)	Max Value (in Eng. Units)	Number of Segments (Max of 30)
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Segment Number	Segment A0	Segment A1	Segment Low	Segment High
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Return to Main Decision      Next      SAVE



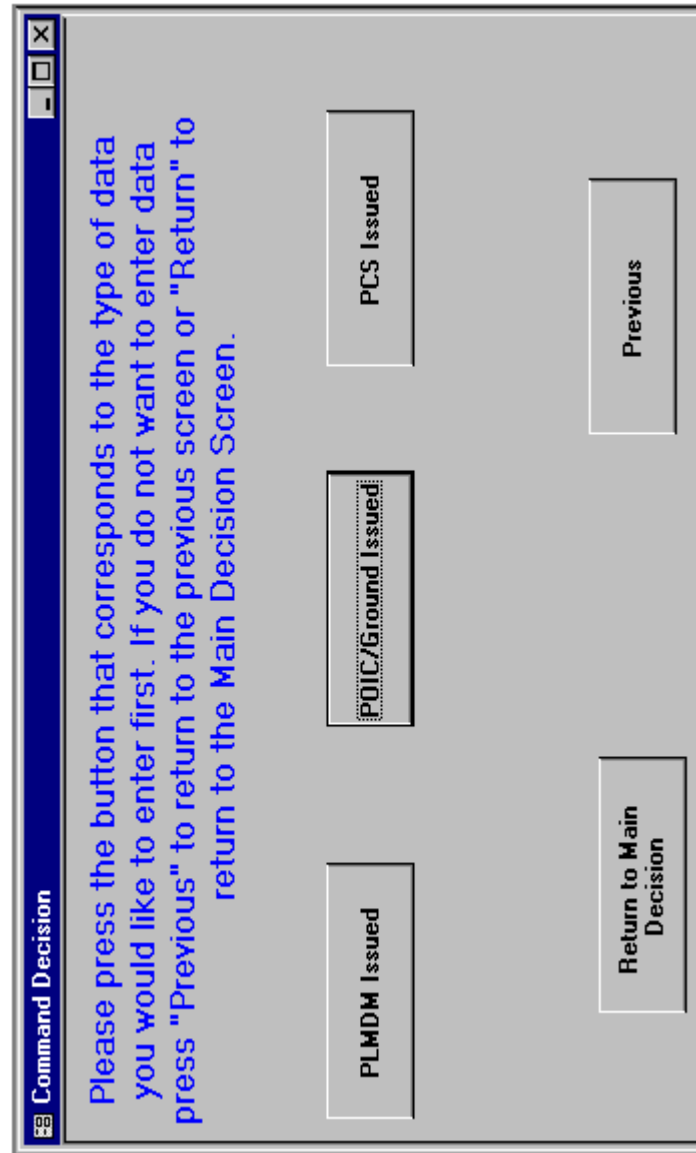
**A-26 Health and Status PCS Limit Check Service Definition**

Please Enter the following data pertaining to PCS Limit Sensing. Then press "Next" to continue, or "Return" to return to the Main Decision Screen

Parameter Correlation Number	Parameter/ Technical Name	Data Type	Engineering Units	Number of Limit sets (max 3)	Lower Limit set 1	Lower Limit set 2	Upper Limit set 1	Upper Limit set 2	Lower Limit set 3	Upper Limit set 3
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Command Correlation Number	Command Mnemonic	Command Name	Command Description	Command PUJ	PLMDM Initiated	PCS Initiated	Timeliner Initiated	POIC Initiated	MPLM Required

Return to Main Decision      Previous      Next      SAVE



**A-28 PCS Command Definition**

Please enter the following command data. Then press "Next" to continue, or "Return" to return to the Main Decision Screen.

Command Correlation Number	Command Mnemonic	Command PUI
<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>

[illegible]

**A-30 Command Definition**

Please Enter the following data that corresponds to the following Command Correlation Numbers and Mnemonics. Then press "Next" to continue processing or "Previous" to return to the previous screen.

Command Correlation Number	Command Mnemonic	Time Constraint	Verification Delay	Telemetry Verification	Length	Variable Length	Critical	Hazard	Legal Station Mode
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="checkbox"/>	<input type="text"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="checkbox"/>	<input type="text"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="checkbox"/>	<input type="text"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="checkbox"/>	<input type="text"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="checkbox"/>	<input type="text"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="checkbox"/>	<input type="text"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="checkbox"/>	<input type="text"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="checkbox"/>	<input type="text"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="checkbox"/>	<input type="text"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="text"/>

A-31 Command Telemetry Verification Definition								
<p>Please Enter the following data that corresponds to the following Command Correlation Numbers and Mnemonics. Then press "Next" to continue processing or "Previous" to return to the previous screen.</p>								
Command Correlation Number	Command Mnemonic	Command PUI	Verification Telemetry PCN	Verification Telemetry PUI	Verification State Code	OR	Verification Range-Low	Verification Range-High
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>		<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>		<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>		<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>		<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>		<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>		<input type="text"/>	<input type="text"/>
			Return to Main Decision		Previous	Next	SAVE	

**A-32 Command Definition #2**

Please Enter the following data that corresponds to the following Command Correlation Numbers and Mnemonics. Then press "Next" to continue processing or "Previous" to return to the previous screen.

Command Correlation Num	Command Mnemonic	Command PUJ	Command Length	Field Mnemonic	Field Description	Start Word	Start Bit	Field Length	Var Field Length	Input Data Type	Uplink Data Type	Predefined or Modifiable	Data/Engineering Value	Units	Range Low	Range High	Calibration Type	Calibration Switching	Tolerance

Return to Main      Previous      Next      SAVE      View PLMDM2



Payload MDM Command Definition #2 PSIV

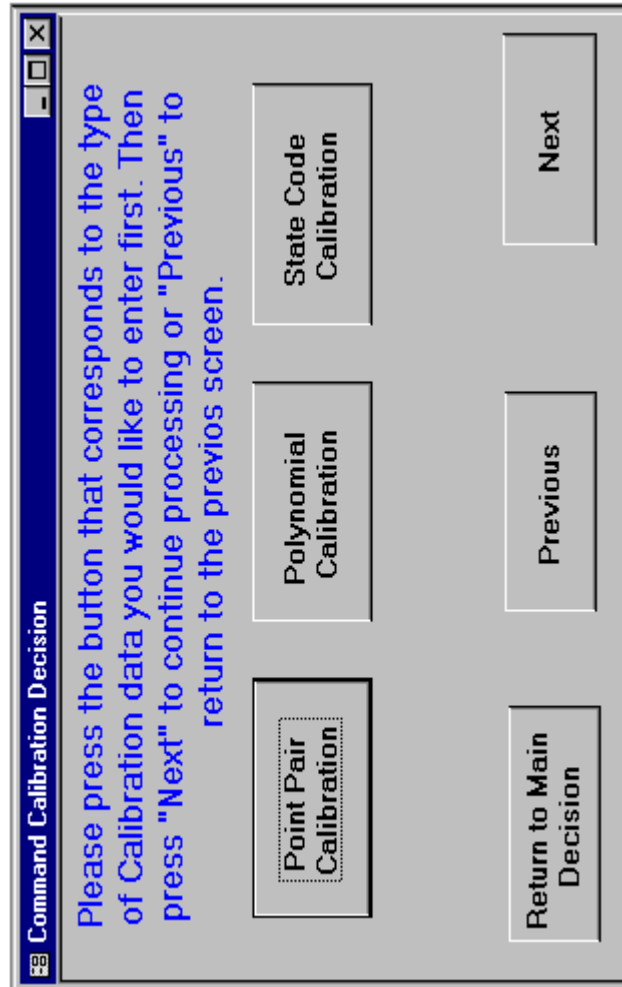
Please Enter the following data that corresponds to the following Command Correlation Numbers and Mnemonics. Then press "Next" to continue processing.

Command Correlation Number	Command Mnemonic	Command Length	Command Word	Command Value	Input Data type
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

Return to Main Decision

Next

SAVE



**A-33 Point Pair Calibration Definition**

Please Enter the following data that corresponds to the following Command Correlation Numbers and Mnemonics. Then press "Next" to continue processing.

Command Correlation Number	Command Mnemonic	Field Mnemonic
<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>

Default Set Number	Set Number	Pair Count	Pair Value
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
	<input type="text"/>	<input type="text"/>	<input type="text"/>
	<input type="text"/>	<input type="text"/>	<input type="text"/>
	<input type="text"/>	<input type="text"/>	<input type="text"/>
	<input type="text"/>	<input type="text"/>	<input type="text"/>

**A-34 State Code Calibration Definition**

Please Enter the following data that corresponds to the following Command Correlation Numbers and Mnemonics. Then press "Next" to continue processing.

Command Correlation Number	Command Mnemonic	Field Mnemonic
<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>

Default Set Number	Set Number	State Code	Counts
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
	<input type="text"/>	<input type="text"/>	<input type="text"/>
	<input type="text"/>	<input type="text"/>	<input type="text"/>
	<input type="text"/>	<input type="text"/>	<input type="text"/>
	<input type="text"/>	<input type="text"/>	<input type="text"/>
	<input type="text"/>	<input type="text"/>	<input type="text"/>

[illegible]

**A-36 Calibration Switching Definition**

Please Enter the following data that corresponds to the following Command Correlation Numbers and Mnemonics. Then press "Next" to continue processing.

Command Correlation Number	Command Mnemonic	Field Mnemonic
		#Name?

Set Number	Calibration Switch Field Mnemonic	Low Range	High Range	OR	State Code

Return to Main Decision      Previous      Next      SAVE



**A-37 Broadcast Ancillary Data and Time**

Will this Payload be using Broadcast Ancillary Data?

☐ YES ☐ NO

Will this Payload be using Broadcast Time?

☐ YES ☐ NO

**NEXT**



[illegible]

**A-38 Ancillary Data Request Form**

Enter the following data that corresponds to a Parameter that is NOT currently in the Payload Ancillary Data set and this Payload requires. Parameters defined on this screen will be placed in a Payload Unique Ancillary Data that will be available for this Payload.  
Press "Return to Main Menu" to exit from screen.

Parameter/ Technical Name	Group PUI	Word PUI	Primitive PUI	Bit Offset	Parameter Description

Return to Main Decision      Previous      NEXT      SAVE

**A-39 LDRL File Transfer Service**

Enter the following data for each File name. Then Press the **NEXT** button to go to the next screen.

File Name	File ID Number	File Size (Bytes)	File Description	File Access Authorization Read	File Access Authorization Write
				<input type="checkbox"/>	<input type="checkbox"/>
				<input type="checkbox"/>	<input type="checkbox"/>
				<input type="checkbox"/>	<input type="checkbox"/>
				<input type="checkbox"/>	<input type="checkbox"/>
				<input type="checkbox"/>	<input type="checkbox"/>
				<input type="checkbox"/>	<input type="checkbox"/>
				<input type="checkbox"/>	<input type="checkbox"/>
				<input type="checkbox"/>	<input type="checkbox"/>
				<input type="checkbox"/>	<input type="checkbox"/>
				<input type="checkbox"/>	<input type="checkbox"/>

**Return to Main Decision**      **NEXT**      **SAVE**

[illegible]

**A-41 PCS Display Definition**

Please enter the following data so that the data will be PCS Displayed. Then press "Next" to continue processing and go back to the Main Decision Screen.

Display Name		Display Description	Display Number

Parameter Correlation Number	Parameter Name	Primitive PUI	Command Correlation Number	Command Name	Command PUI

[Return to Main Decision](#) [Next](#) [SAVE](#)

**A-42 Video**

Please enter the following video data. Then press "Next" to continue processing and go back to the Main Decision Screen.

Video Uplink?	<input checked="" type="radio"/> Yes <input type="radio"/> No	Rate <input type="text"/> mbps	Duration <input type="text"/> sec
Video Downlink via HRDL?	<input checked="" type="radio"/> Yes <input type="radio"/> No	Rate <input type="text"/> mbps	Duration <input type="text"/> sec
Video Downlink via ISS Video Baseband Signal Processor?	<input checked="" type="radio"/> Yes <input type="radio"/> No		
Video Downlink Resolution	<input type="text"/>	Video Frame to Frame Rate	<input type="text"/> sec

**A-43 Unfinished Screens**

The Database has determined that you have not completed the following screens. Please place a check mark beside the screens you wish to complete and press "NEXT" or press "EXIT" to continue with normal processing.

**Unfinished Screens**

<input type="checkbox"/>	<input type="text"/>
<input type="checkbox"/>	<input type="text"/>
<input type="checkbox"/>	<input type="text"/>
<input type="checkbox"/>	<input type="text"/>
<input type="checkbox"/>	<input type="text"/>
<input type="checkbox"/>	<input type="text"/>
<input type="checkbox"/>	<input type="text"/>
<input type="checkbox"/>	<input type="text"/>
<input type="checkbox"/>	<input type="text"/>
<input type="checkbox"/>	<input type="text"/>

**Customer Contact, General Information or Payload Description**

Please press the button that corresponds to the type of information you would like to enter first. If you do not want to enter information press "Previous" to return to the previous screen or "Return" to return to the Main Decision Screen.

Customer Contact Information

General Information

Payload Description

Return to Main Decision

Previous



**A-44 Customer Contact Information**

Enter the following Customer Contact data. Then press "NEXT" to continue or "Return to Main Decision" to return to the main decision menu.

Name			Title		
Organization			Street		
City		State/Province		Country	
Zip/Postal Code		Other		Internal Mail Code	
Phone Number		Fax Number		Page Number	
Email Address			www Page Address		

[Return to Main Decision](#) [Next](#) [SAVE](#)

The screenshot shows a software window with a blue title bar containing the text "A-45 General Information" and standard window control icons (minimize, maximize, close). The main area has a light gray background. At the top, blue text reads: "Enter the following information. Then press 'NEXT' to continue or 'Return to Main Decision' to return to the main decision menu." Below this is a large, empty white rectangular box. Underneath the box, the text "General Information" is centered. At the bottom of the window, there are three gray buttons with black text: "Return to Main Decision" on the left, "Next" in the center, and "SAVE" on the right.

**A-45 General Information**

Enter the following information. Then press "NEXT" to continue or "Return to Main Decision" to return to the main decision menu.

General Information

Return to Main Decision

Next

SAVE

A-46 Payload Description

Enter the following information. Then press "NEXT" to continue or "Return to Main Decision" to return to the main decision menu.

Payload Description

Next

Return to Main Decision

SAVE

The screenshot shows a standard Windows-style window with a title bar containing the text 'A-46 Payload Description' and standard minimize, maximize, and close buttons. The main area of the window has a light gray background. At the top, there is a blue header bar with the title text. Below this, a blue instruction text reads: 'Enter the following information. Then press "NEXT" to continue or "Return to Main Decision" to return to the main decision menu.' In the center, there is a large white rectangular box labeled 'Payload Description' on its left side. At the bottom of the window, there are three buttons: 'Return to Main Decision' on the left, 'Next' in the center, and 'SAVE' on the right. All buttons are gray with black text.

(This Page Intentionally Left Blank)